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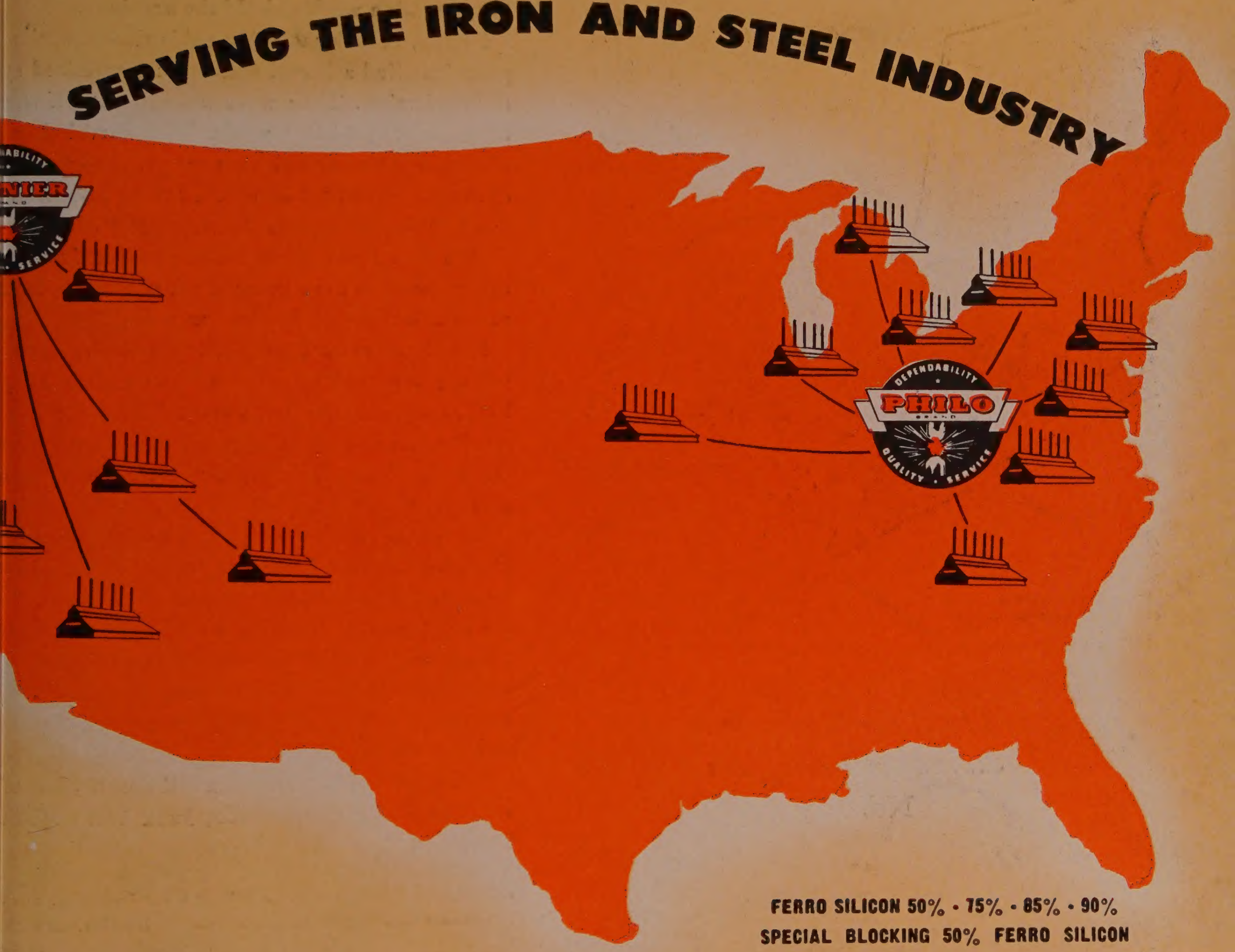
The
IRON AGE

DECEMBER 2, 1948

Illinois U Library


SERVING THE IRON AND STEEL INDUSTRY
DEPENDABILITY
PHILO
BRAND
QUALITY · SERVICE
NIER

FERRO SILICON 50% · 75% · 85% · 90%
SPECIAL BLOCKING 50% FERRO SILICON
H. C. FERRO CHROMIUM • FERRO MANGANESE
BOROSIL • SIMANAL

Briquets

SILICON • MANGANESE • CHROME

Ohio Ferro-Alloys Corporation
Canton, Ohio

Chicago Detroit Pittsburgh San Francisco Tacoma

Farval saves $960

in one year

on world's largest Marcus driv

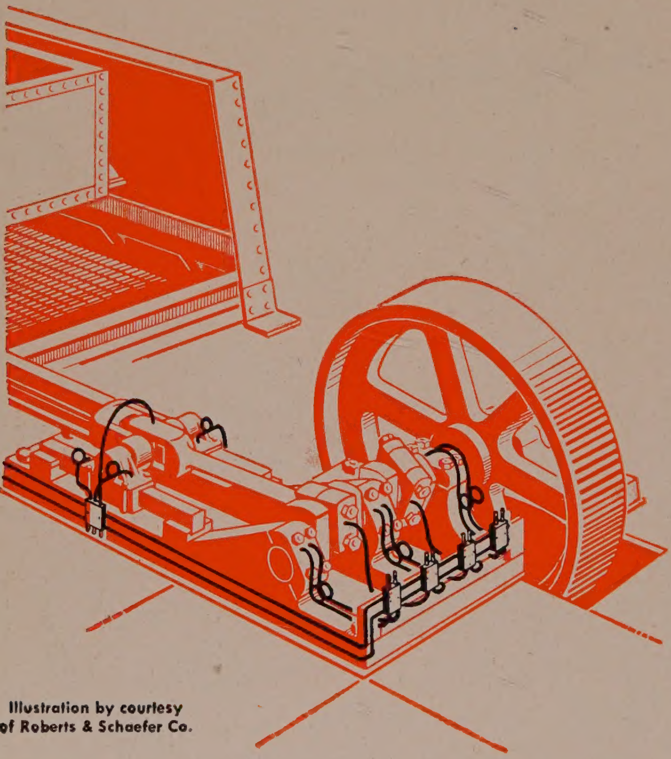


Illustration by courtesy of Roberts & Schaefer Co.

FARVAL—*Studies in Centralized Lubrication*
No. 108

TWO men used to spend all their time lubricati the drive of the world's largest Marcus shak screen, located in a West Virginia tipple. They h to use an expensive graphite grease, and it requir 300 pounds a week to hold the bearings.

Finally, in order to relieve this situation, the co pany installed a Farval automatic centralized syste of lubrication. They were able to cut off the tw oilers, saving $160 a week. With Farval they we also able to use a much cheaper grease—and furthe used only one-third as much, saving another $30 week. Thus an annual dollar saving of more tha $9600 was realized on labor and lubricant alon not to mention the increased life of the bearings an the elimination of shutdowns and delays.

Farval centralized lubricating systems have be serving the coal industry for more than 17 yea In preparation plants, Farval lubricates Feede Crushers, Conveyors, Shakers, Vibrating Scree Elevators, Washers, Jigs, Dryers, Mixers, Loadi Booms and Drives.

Farval delivers oil or grease under pressure to group of bearings from one central station, in exa quantities, as often as desired. It does its work whi the equipment is in operation. Farval is the Duali System with the Positive Piston Displacement Valv This valve has but two moving parts and is ful adjustable, with a Tell-tale indicator at each beari to show the job is done.

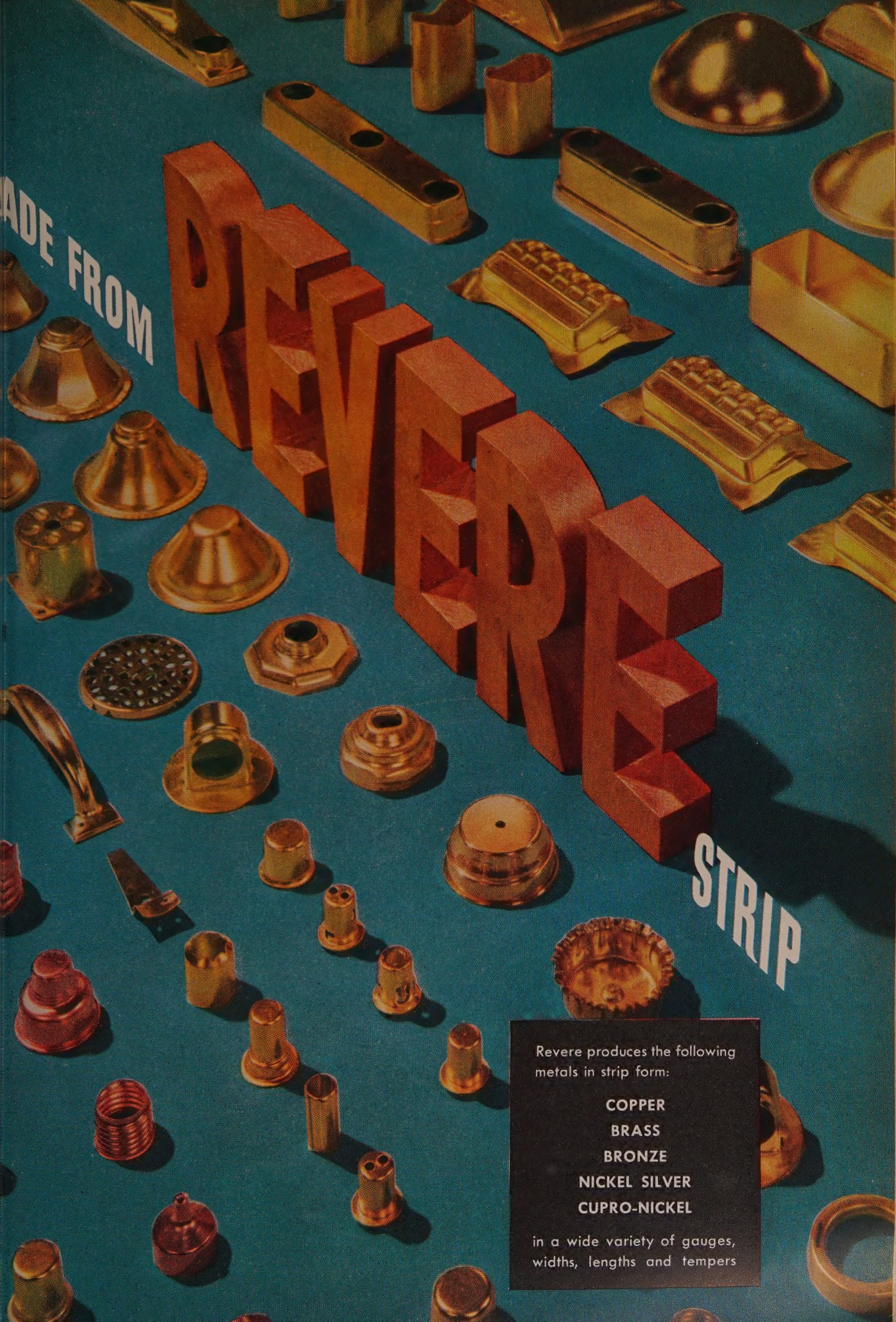
Write for Bulletin 25 for a full description of F val. The Farval Corporation, 3252 East 80th Stre Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industr Worm Gearing. In Canada: Peacock Brothers Limited.

FARVAL

CENTRALIZED
SYSTEMS OF
LUBRICATION

THE IRON AGE, published every Thursday by the *CHILTON CO. (INC.)*, Chestnut and 56th Sts., Philadelphia 39, Pa. Entered as second class m Nov. 8, 1932, at the Post Office at Philadelphia under act of March 3, 1879. $8 yearly in United States, its territories and Canada; other Wes Hemisphere Countries $15; other Foreign Countries $20 per year. Single Copies 35¢. Annual Review Number, $2.00 Vol. 162, No. 23.


ADE FROM
REVERE
STRIP

Revere produces the following metals in strip form:

COPPER
BRASS
BRONZE
NICKEL SILVER
CUPRO-NICKEL

in a wide variety of gauges, widths, lengths and tempers

REVERE STRIP and ROLLS for fast, economical fabrication

Revere Metals in strip and roll form are widely used throughout industry for the manufacture of parts and products by such processes as deep drawing, stamping, punching, spinning, embossing, rolling, etching, soldering, polishing, plating.

Special finishes, such as embossed, polished, etc., are available from the mill for some alloys and forms. Naturally, the value of such finishes depends upon two main factors: the fabrication processes through which the metal is put in your plant, and the nature of the articles or parts you make. Where suitable, special finishes often reduce costs and improve the beauty, attractiveness or service of the finished product.

BRASS

Brass is an old and honored metal, corrosion-resistant, and adaptable to a wide range of fabrication conditions, from simple stamping to exceptionally deep drawing, as in cartridge cases. Yet it should be remembered that brass is not just brass. There are many different brasses which vary in their composition. In addition, each brass alloy can be had in a variety of physical conditions. By rigid control of processing in the Revere Mills, strict specifications as to temper, hardness, and grain size are met.

COPPER

Revere produces several types of copper for various applications. All contain over 99% pure copper, but some contain in addition traces of other elements which adjust the physical qualities to meet special needs. Electrolytic Tough Pitch Copper in strip form is widely used for the manufacture of electrical parts by stamping and drawing.

GENERAL CONSIDERATIONS

The importance of a careful study of both composition and physical properties cannot be stressed too often. It might be, for example, that a difference in alloy, temper, gauge or dimensions would make manufacturing economies possible.

Sometimes a reduction in the cost of the material can be achieved by slight changes in specifications, without affecting fabrication or service of the part. To this saving may be added an additional one—reduction in amount of scrap. Though scrap has a high re-sale value, reduction in the amount of it should result in lower unit costs.

CARTRIDGE BRASS, 70%

(Seventy-Thirty Brass). Alloy No. 160. (Copper 70.0%, zinc 30.0%).

Forms Available: Sheet, strip, tube, rod, rectangular bar and lockseam tubing.

General Properties: Revere Seventy-Thirty Brass has the best combination of ductility and strength of all the brasses and accordingly has superior cold-working properties.

Typical Uses: Seventy-Thirty Brass is recommended for difficult deep drawn, stamped or spun parts, cartridge cases, ammunition components.

Working Properties: Cold-working, soldering, polishing—excellent. Hot-working—good. Machining—fair. Welding—gas, carbon arc, metal arc, spot and seam welding for thin gauge.

ASTM Specifications: Sheet: B19, B36. Tube: B135. Rod: B134.

ELECTROLYTIC TOUGH-PITCH COPPER

Alloy No. 100. (Copper 99.90%, minimum).

Forms Available: Sheet, strip, plate, rod, bus bar, tube, forgings.

General Properties: This copper combines high electrical and thermal conductivity with excellent working qualities. It resists corrosion, and is a favorite for parts that are to be plated.

Typical Uses: Electrolytic Copper is recommended for stamped and drawn parts such as escutcheons, lamp sockets, housings; for electrical equipment and conductors; for roofing, flashing, gutters; process equipment; printing rolls; forgings.

Working Properties: Cold-working, hot-working, soldering, polishing, plating—excellent. Machining—fair. Welding—deoxidized copper preferred.

ASTM Specifications: Sheet: B11, B101, B152. Rod: B12, B48, B49, B124, B133, B187. Tube: B13, B111, B188.

PHOSPHOR BRONZE, 5% (A)

Alloy No. 308. (Copper 95.0%, tin 5.0).

Forms Available: Sheet, strip, rod.

General Properties: Revere Phosphor Bronze, grade A, possesses high tensile strength, high resistance to corrosion and fatigue and has a low friction coefficient. It is also highly resistant to season cracking.

Typical Uses: Revere Phosphor Bronze, grade A, is used for springs, diaphragms, bellows, lock washers, cotter pins, fuse clips, clutch discs, screw machine stock, perforated sheets, etc.

Working Properties: Cold-working, soldering, polishing—excellent. Hot-working—poor. Machining—fair. Welding—gas, carbon arc, metal arc, spot and seam welding for thin gauge.

ASTM Specifications: Sheet: B100, B103. Rod: B139, B159.

HERCULOY (Silicon Bronze)

Alloy	Copper	Silicon	Manganese
420	96.0%	3.0%	1.0%
421	98.00%	1.75%	0.25%

Forms Available: Sheet, strip, plate, rod, wire, tube, forgings.

General Properties: Herculoy has excellent mechanical properties. The strength of Herculoy is comparable to that of low and medium carbon steel. Its resistance to corrosion is similar to that of copper. It is non-magnetic and gold colored.

Typical Uses: Herculoy is recommended for welded tanks, pressure vessels (unfired pressure vessels codes), vats, baskets, chemical equipment, etc.; Herculoy 421 for hardware, bolts, screws, lag screws, cotter pins, washers, turnbuckles, marine construction, screens, filters, ducts, weatherstrips, springs, forgings.

Working Properties: Cold-working, soldering—excellent. Hot-working—good. Machining, polishing—fair. Welding—gas, carbon arc, metal arc, spot and seam welding for narrow gauge.

ASTM Specifications: Sheet: B96, B97, B100. Rod: B98, B99, B124.

The following Revere Metals are also produced in strip and roll: **Copper: Silver-bearing, Deoxidized, Oxygen-free — Nickel Silver — Admiralty — Commercial Bronze, 90% — Red Brass, 85% — Yellow Brass — Naval Brass — Cupro-Nickel.**

On this page you will find technical data on only a few of the Revere Metals produced in strip and other forms as well. If you require further information, get in touch with any Revere Office or distributor.

REVERE
COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.
Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.

Nothing pleases Revere more than to be able to sit down with a customer and discuss fabrication methods and end uses. Such friendly collaboration often has resulted in increased production, lower costs, an improved product, or all three. In one case, substitution of leaded brass for yellow brass was suggested, for greater ease in blanking and to reduce the need for dressing down with a file after assembly. In another, a slight change in gauge reduced material cost. In still another, a different temper eliminated one anneal. The Revere Technical Advisory Service will be glad to work with you on your problem.

LOCOMOTIVES or PINS.....

Pennsalt
leaners are at your service

Into the world's largest soak tank, a huge Pacific-type comotive dips running-board-high. Then, some 45 min- es later, out she comes . . . stripped of paint, grease, ad dirt . . . ready for Class 1A repairs.

r this tough metal cleaning job, a heavy duty Pennsalt eaner is used consistently.

d, at the other extreme, you'll find Pennsalt products aning tiny brass pins prior to plating.

The point is: regardless of what metal product you make, or how tough the metal cleaning problem, Pennsalt Cleaners will help you do a good job quickly, and economically. They have proved their superiority to a long list of large, well-known users. Pennsalt Cleaners are concentrated, all-active, free-rinsing, long lasting and scientifically balanced to insure peak performance.

When you call Pennsalt in on your problems, you get the services and experience of technically trained representatives. Write to Special Chemicals Division, Pennsylvania Salt Manufacturing Company, 1000 Widener Building, Philadelphia 7, Pa.

PENN SALT
METAL CLEANERS

Box car builder saves $2925 a day —CAN YOU?

General Electric's money-saving pack of facts: manual—film—review booklets.

Get these facts to your key men and see how much you can save

- WITH RESISTANCE WELDING, a box car builder cut costs by $2925.
- WITH RESISTANCE WELDING, a small transformer manufacturer saved $84,000 per year.
- WITH RESISTANCE WELDING, a radio tube maker stepped production up to an *unprecedented 2,500 per day.*

In your plant, too, savings and production feats like these are possible—when your key personnel *know* the up-to-the-minute facts on resistance welding—*know* how to put them to work on your problems. And it's so easy to get the facts to them *now*—at no cost.

FREE to business management

Examine the General Electric *Resistance Welding Manual* free of charge. It covers every phase of resistance welding from a glossary of welding terms to specific industrial applications in plants like yours. It tells *where* resistance welding can be used—*how* it can be used—exactly *what* benefits you can expect from it. It's written by experts, *without sales bias,* in a language your men can easily understand. Look through it. Satisfy yourself that it will pay off.

Get a FREE showing of the film

Your key personnel will get a kick learning the newest facts about resistance welding in this modern, absorbing, *visual* way. Here's a General Electric sound film in full color that wallops across its ideas — actually *shows* you how resistance welding is building better products for less in plants like yours. It's prepared by resistance-welding specialists in terms that are grasped readily. Show it to your key men.

ACT NOW! Don't delay. Remember — resistance welding saves you money in *five* ways—and does a better job, too. So start the ball rolling by filling in the coupon below and we'll rush you a copy of the G-E *Resistance Welding Manual. And,* with it, we'll tell you how to arrange for a free showing of the film.

FREE TO BUSINESS MANAGEMENT

Attach to your business letterhead

General Electric Co.
Section C684-10
Schenectady 5, N. Y.

Please send me a sample copy of the G-E *Resistance Welding Manual* without cost or obligation, with details on how I can arrange for a FREE SHOWING of the film. (Extra copies at regular manual price—$1.00.)

Name__________ Title__________
Company__________
Street__________
City__________

GENERAL ELECTRIC

Fatigue Cracks

BY C. T. POST

Stress Consumer Relations

—Headline, The Iron Age Nov. 25, p. 108

• • Hardly worth a headline. For many companies, they've been strained for several years.

The article goes on to say, incidentally, that emphasis is being shifted from public relations activity to customers relations, according to a National Industrial Conference Board survey. The line between customers and public is so slight, to our mind, that it's doubtful whether a distinction could, or should, be made.

Stopper

• • F. J. Stokes Machine Co., Philadelphia, writes a second chapter on the effective use of blank space for getting a message across. (The first chapter was National Biscuit Company's full page in *Life* with only three words of copy.) Stokes' ad in last week's issue of your f.f.j. (p.109) included 20 sq. in. of blank space except for this legend:

> This space is crowded . . .
> compared with High Vacuum.

High vacuum equipment, naturally, was the subject of the ad. And nothing can express a vacuum quite as well as nothing.

For Christmas

• • A memorandum from the circulation department offers hope and logic to those tussling with the annual "what to give for Christmas" problem. It points out that a subscription to your favorite family journal, trimmed with tinsel and colored lights, makes as tasteful a gift as you could hope to find anywhere. Give it to the boss, the memo suggests. Or, if you're the boss, give it to the boys down toward the end of the routing list. The only objection we can see to the latter is that if they read your f.f.j. carefully each week, they may be in a position to take your job away from you a year from now. If you don't believe it, toss eight dollars in the circulation department till and find out for yourself.

Next year won't be like 1948, when the readers received 53 weekly issues because of a superabundance of Thursdays. Even so, the per issue cost to the U. S. subscriber in a 52 week year is somewhat under 15½¢—less than any publication in the field on an annual basis.

Calculator

• • Tom Lloyd, who directs the brains department's machine tool desk, has justified his regular reading of *Esquire* magazine for source material on technical subjects.

Tom points out an advertisement for a super wrist watch, technically a chronograph, which "counts pulse beats, clocks speed in miles, measures speed of sound, multiplies and divides." The latter achievement is only part of the watch's mathematical potentiality, depending on the wearer, for there is a complete built-in slide rule.

Although the watch face embraces seven separate dials, presumably you also can tell time if you find the right set of numerals.

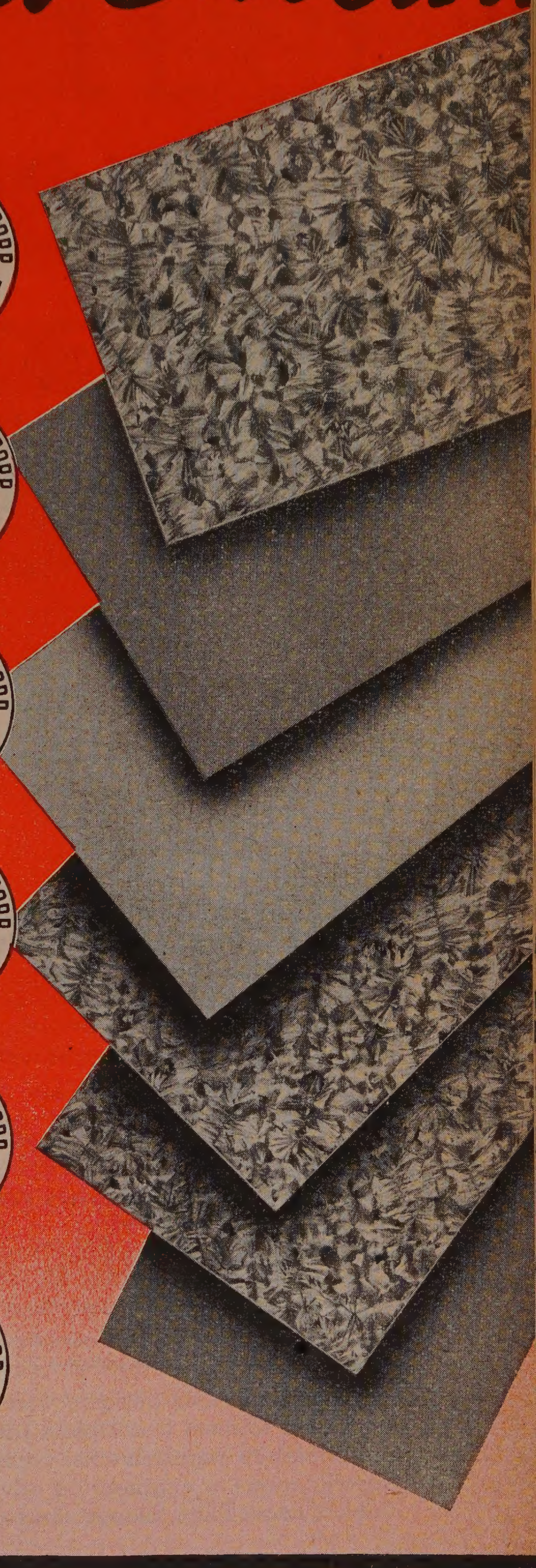
On the Nose

• • The brains department currently is in more than the usual frenzy getting under way on the 1949 Annual Review issue, due January 6. This issue, you will recall, has about 400 pages. The circulation boys call it a "veritable almanac of metal-working information past, present, and future."

On the latter angle, you will recall that the Annual always contains a breakdown of steel consumption by industries. At press time exact information is available from the American Iron & Steel Institute on the first 8 months of the year, but the brains department statistical genius must estimate the balance. When final Institute figures for 1947 were released by the Institute last April, we checked on our wrist watch slide rule to find how far off the estimate in last January's Annual was. The error was 0.4 pct. If Mr. Gallup wants to drop in, we'd be glad to introduce him.

Product-Proved Sheets..

PREFERRED BY
ANUFACTURERS
ND FABRICATORS



CONTINENTAL STEEL CORP. COPPER NICKEL CHROMIUM KONIK METAL KOKOMO, IND.

CONTINENTAL STEEL CORP. STEEL *Galvannealed* SHEETS KOKOMO, IND.

CONTINENTAL STEEL CORP. COPPER *Dull-Coat* STEEL KOKOMO, IND.

CONTINENTAL STEEL CORP. *Copper Steel* KOKOMO, IND.

CONTINENTAL STEEL CORP. STEEL CONTINENTAL SHEETS KOKOMO, IND.

CONTINENTAL STEEL CORP. ELECTRICAL CONTINENTAL SHEETS KOKOMO, IND.

Manufacturers and fabricators who insist on steel
sheets that combine workability with proved qual-
have found in the Continental line just the *right*
t for each specific requirement.

he ability of the various types of Continental sheets
ithstand difficult forming operations . . . to provide
ger product life . . . proves the importance of using
of these familiar trademarked Continental sheets.

hese are the sheets preferred by many companies
heir highest quality products: Continental KONIK,
eet which combines open hearth steel with copper,
el and chromium to produce one of the finest, most
nomical sheets you can buy; Continental GALVAN-
ALED, a special quality sheet possessing a matte-
surface which "takes" and "holds" paint and fine
hes without the need of costly preparatory treat-
ts; Continental DULL-COAT, another sheet with
nc coating which provides a tight bond for paints,
mels and lacquers; Continental COPPER STEEL
ets, noted for their extra resistance to rust and
osion, and for their workability; Continental GAL-
NIZED, a sheet with a zinc coating that withstands
cult forming operations without flaking or peeling;
Continental ELECTRICAL sheets which are made
cially for manufacturers of electrical equipment.
te for special descriptive folder.

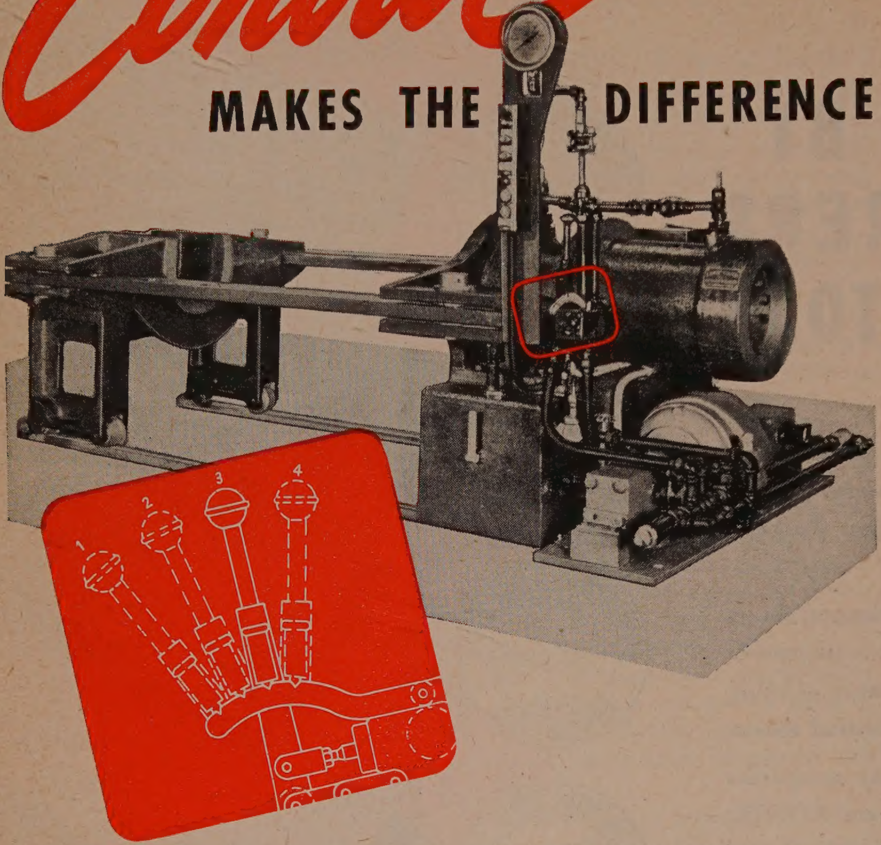
NTINENTAL STEEL

CONTINENTAL
STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

DUCERS OF STEEL SHEETS, including
nental GALVANIZED, COPPER-STEEL Gal-
ed, KONIK steel sheets Galvanized,
UNIFORM SPANGLE Galvanized, DULL COAT,
Continental GALVANNEALED, ELECTRICAL, Hot
Rolled Pickled, and many styles of Formed Roofing.

ALSO, Manufacturer's Wire in many sizes, shapes, tempers, and finishes, Continental Chain Link Fence, Nails, and other steel products.



Control
MAKES THE DIFFERENCE

THIS *all-purpose* R. D. Wood HYDROLECTRIC Horizontal Forcing Press for general machine shop and maintenance service is the ideal press for assembly and disassembly of heavy machinery components. And here's why: *Control makes the difference* . . . control of operation by means of the special lever-operated control valve which permits:

1. *Main cylinder on pressure. Pullback cylinder on pressure. High speed forward—*
   12.7 tons at 400 psi—57"/min.
   56 tons at 1,770 psi—12.7"/min.
2. *Main cylinder on pressure. Pullback cylinder on exhaust. Slow speed forward—*
   22.6 tons at 400 psi—32"/min.
   100 tons at 1,770 psi—7.2"/min.
3. *Neutral—pumps by-passing to oil reservoir.*
4. *Main cylinder on exhaust. Pullback cylinder on pressure. High speed return stroke—72.5"/min.*

This press in other designs, various sizes and capacities is available to meet a complete range of manufacturing and maintenance requirements. Send today for more detailed specifications or engineering advice. R. D. Wood Company, Public Ledger Bldg., Independence Square, Philadelphia 5, Pa.

HYDRAULIC PRESSES AND VALVES FOR EVERY PURPOSE • ACCUMULATORS • ALLEVIATORS • INTENSIFIERS

RDW
R. D. Wood Company
EST. 1803

Dear Editor:

X-RAY ANALYSIS

Sir:

Can you give us any further info
mation on the following Newsfro
from the Aug. 31 issue: "An X-ra
fluorescent analysis method has bee
devised for analyzing quantitativel
metallic and nonmetallic materials.
permits the analysis of finished or sem
finished products without destroyi
or changing the samples in any ma
ner. Raw materials can be analyze
without loss for sampling. Partic
larly suited to the analysis of high all
steels and high temperature heat a
corrosion resistant alloys, this meth
bypasses the ramifications associate
with photographic technique."

FREDERICA M. WEITLAUF
Steel and Tube D
The Timken Roller Bearing Co.
Canton, Ohio

● See the article "X-Ray Fluorescen
Analysis," in the issues of Oct. 28 and N
4, 1948.—Ed.

BALL BEARING STEELS

Sir:

I have just read the series of articl
entitled "Metallurgical Aspects of B
Bearing Steels" and found them ve
interesting. We would like very mu
to have three or four reprints of th
paper if they are available.

A. L. HARTLEY
Chief Metallurg
The Cincinnati Milling Machine Co.
Cincinnati

SPOT TESTING KITS

Sir:

In the Oct. 17th, 1946 and Oct 23
1947 issues there were articles outl
ing spot testing for steel and oth
metals by the use of certain chemi
re-agents. Could you advise as
whether the chemicals used for
above tests are obtainable from a
firm or firms in ready to use kits.

Also, could you forward a reprint
the article on this subject from yo
Oct. 17th, 1946 issue.

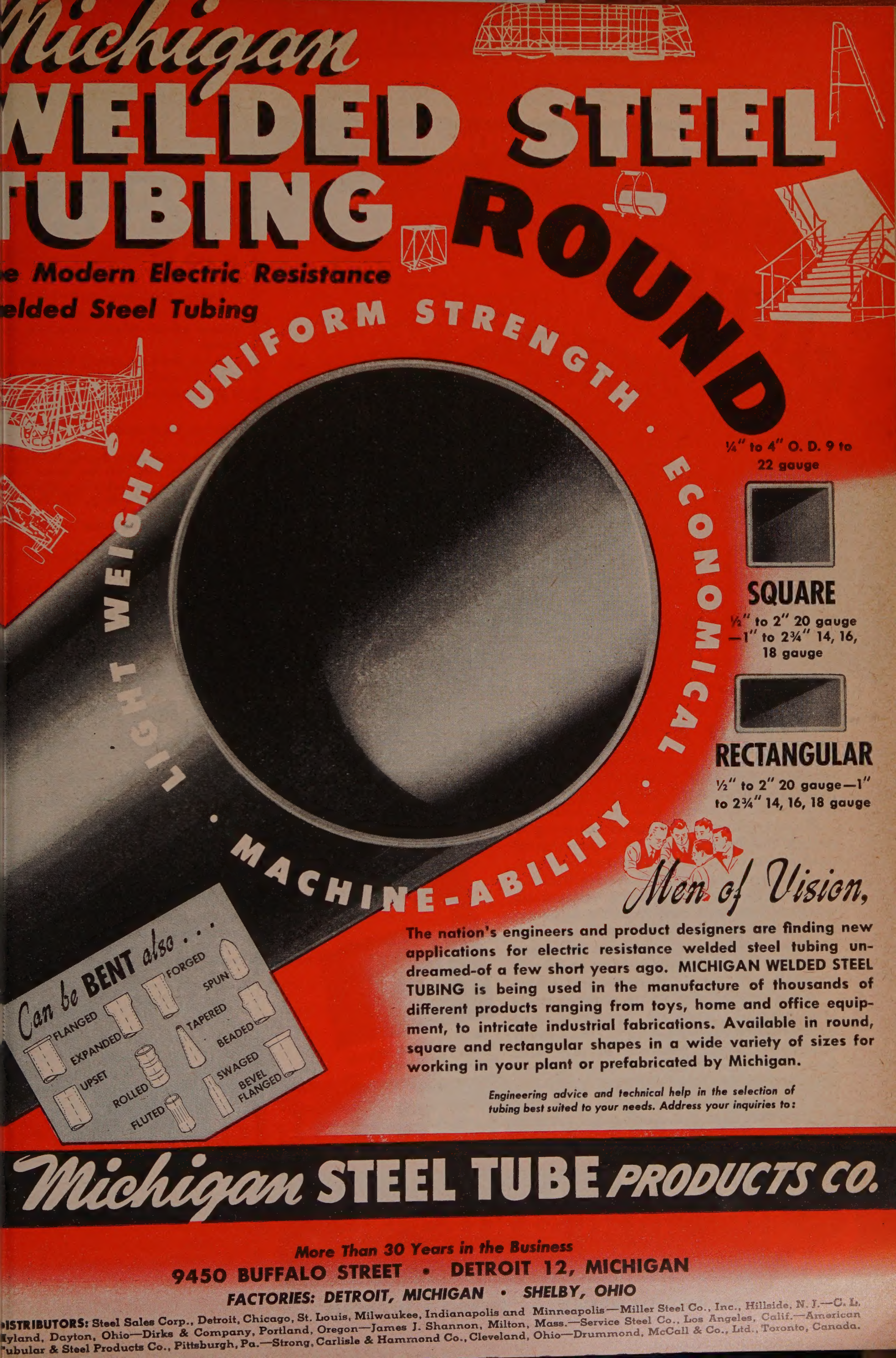
CAPT. B. R. SPENCE
Supt. H. M. C. Docky
Dept. National Defense
Esquimalt, B.C., Canada

● Such kits are apparently not carried
chemical supply houses; the reprint is be
forwarded.—Ed.

REQUEST FROM AUSTRALIA

Sir:

We should be glad if you could
ward us one or more reprints of
nine articles, "Precision Casting, L
Wax Process." Our interest is ba
on the fact that we are the Austra
representatives of the English
Silicon (Organic) Developments


UNIFORM STRENGTH · ECONOMICAL · MACHINE-ABILITY · LIGHT WEIGHT ·
Can be BENT also . . .
FLANGED
EXPANDED
UPSET
ROLLED
FLUTED
FORGED
SPUN
TAPERED
BEADED
SWAGED
BEVEL FLANGED

ichigan WELDED STEEL UBING

e Modern Electric Resistance
elded Steel Tubing

ROUND

¼" to 4" O. D. 9 to 22 gauge

SQUARE

½" to 2" 20 gauge —1" to 2¾" 14, 16, 18 gauge

RECTANGULAR

½" to 2" 20 gauge—1" to 2¾" 14, 16, 18 gauge

Men of Vision,

The nation's engineers and product designers are finding new applications for electric resistance welded steel tubing undreamed-of a few short years ago. MICHIGAN WELDED STEEL TUBING is being used in the manufacture of thousands of different products ranging from toys, home and office equipment, to intricate industrial fabrications. Available in round, square and rectangular shapes in a wide variety of sizes for working in your plant or prefabricated by Michigan.

Engineering advice and technical help in the selection of tubing best suited to your needs. Address your inquiries to:

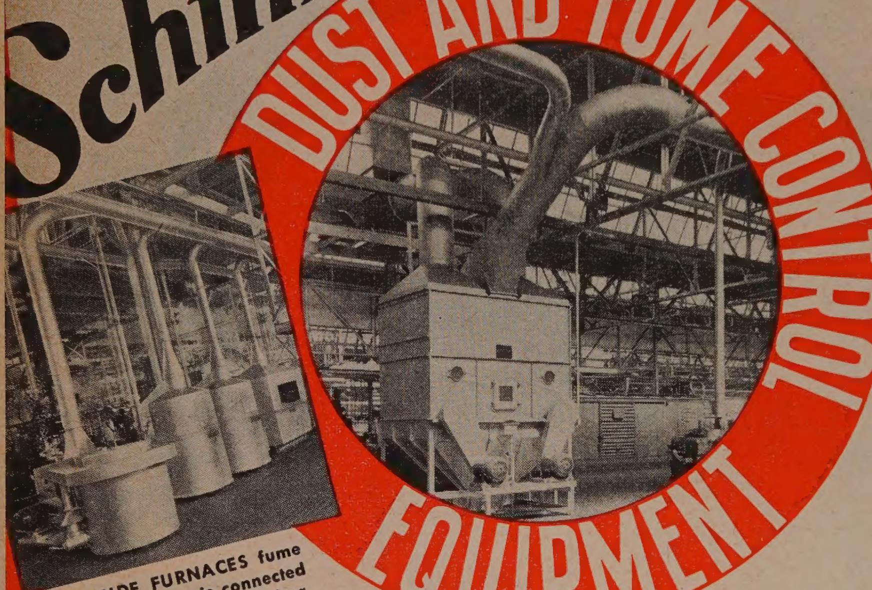
Michigan STEEL TUBE *PRODUCTS CO.*

More Than 30 Years in the Business
9450 BUFFALO STREET • DETROIT 12, MICHIGAN
FACTORIES: DETROIT, MICHIGAN • SHELBY, OHIO

ISTRIBUTORS: Steel Sales Corp., Detroit, Chicago, St. Louis, Milwaukee, Indianapolis and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—C. L. yland, Dayton, Ohio—Dirks & Company, Portland, Oregon—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—American ubular & Steel Products Co., Pittsburgh, Pa.—Strong, Carlisle & Hammond Co., Cleveland, Ohio—Drummond, McCall & Co., Ltd., Toronto, Canada.

FOR TOP OPERATING EFFICIENCY
at Reduced Maintenance Cost
PRODUCT IMPROVEMENT...
PLANT ENGINEERS RECOMMEND
Schmieg

Below is shown a 14000 CPM Centri-Merge Arrester Unit on a cast iron dust exhaust system.



CYANIDE FURNACES fume exhaust system is connected to a Centri-Merge Washer.

To Fit Both Plant and Product

Dust and fume control equipment correctly designed and manufactured is of vital importance to the safety and health of plant personnel, and results in product improvement. Schmieg engineers pioneered this principle of dust and fume control.

Plant engineers call upon Schmieg to design and build dust and fume control equipment to fit both plant and product. Typical installations by Schmieg include dust and dirt arresters, fume exhaust air washers, kerosene and welding fume exhaust units, stock and dust handling equipment in textile plants, cyclone collectors for brake lining dust, polishing and buffing dust collectors... to name just a few.

Schmieg dust and fume control units give you (1) reduced operating and maintenance expense, and (2) maximum efficiency in the removal of dust and fumes for improvement of working conditions and product quality.

DISC SANDING BOOTH Proper ventilation keeps dust from escaping to other parts of plant.

THE best AIR PURGE is CENTRI MERGE

Our engineers will be pleased to consult with you in the solution of your problem

Schmieg INDUSTRIES INC.
Engineers & Manufacturers

296 PIQUETTE AVENUE • DETROIT 2, MICHIGAN

and we are naturally anxious to
tain as much information regar
precision casting as possible. If
necessary to forward us the comp
journals containing the articles,
shall be only too glad to have
charge us with the cost of same.

R. E. JEFFRIES PTY. LT
Sydney, Australia

● Fifteen articles on precision casting contained in a booklet which is avai at $1.00 per copy.—Ed.

PL NO. 395

Sir:

Please send us a copy of Public
No. 395 if you have it available. If
please advise where same can be
cured.

Also, send us latest tonnage all
tions of steel to various industries
a list of those industries.

R. E. SMA
Purchasing A
The Gas Machinery Co.
Cleveland, Ohio

● Our Washington Bureau is forwardi copy of PL No. 395; the latest tabul of tonnages on voluntary allocation given in the table on p. 123, Sept. 9

OF GREAT VALUE

Sir:

We have been examining the
edition of the Directory of Tool S
and like it very much. It will
tainly be of great value to an
working with tool steel. In our
organization we can put three
copies to good use, and if you
send us three considering this l
an order, it will be very much
preciated.

G. CO
Secr
Kloster Steel Corp.
Chicago

Sir:

We are enclosing our check
which please send us one copy o
Directory of Tool and Die Steels.

CHASE BRASS & COPPER
Waterbury, Conn.

● The directory now sells at the foll prices: one or two copies, $2.00 each; copies, $4.50; six or more copies each.—Ed.

TIME STUDIES

Sir:

I would appreciate it very mu
you would forward tear sheets o
article "The Right and Wron
Time Study Computations"
appeared in the Aug. 17, 1944,

ROBERT C. BOY
Production Control
Bagley & Sewall Co.
Watertown, N. Y.

PLATING RECESSES

Sir:

Please send us 5 copies ea
"Electroplating Recessed Areas

Engineered GEARS . . .

. . . HELP *Engineers* TO DESIGN, OPERATE, AND MAINTAIN BETTER MACHINES . . .

PHILLIE GEAR

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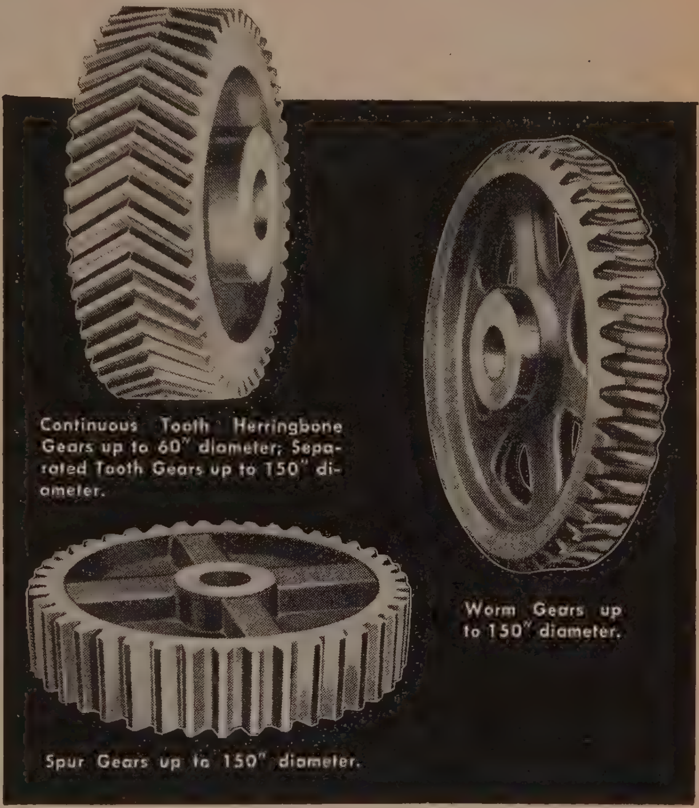

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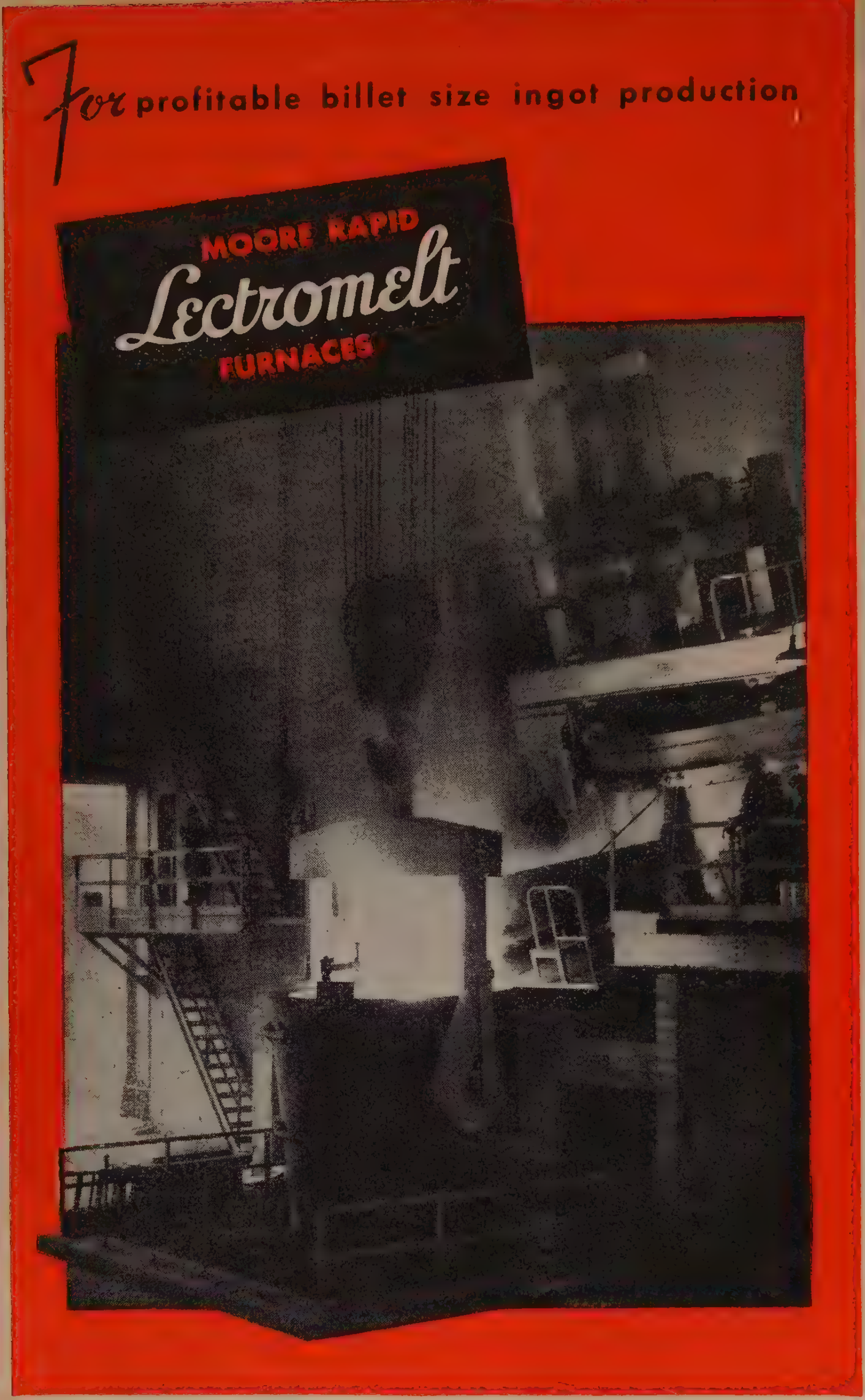

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C. H. WHITIN
Mfg. Consulting
General Electric Co.
Schenectady, N. Y.

LOST WAX PROCESS

Sir:

We are interested in obtaining formation on precision casting, p ticularly the lost wax process. understand that your publication published several articles on this s ject and would appreciate your f warding to us the issues involved.

H. G. SILCOX, I
Beemer Engineering Co.
Philadelphia

● Fifteen articles on the subject have b reprinted in a booklet which is available $1.00 per copy.—Ed.

HARD FACINGS

Sir:

We would appreciate tear sh copies of the articles "Effect of W ing Practice on Abrasion Resista of Hard Facings" and "Precis Casting with Plastic Patterns" fr the Oct. 7 issue.

J. A. KEARNE
Metallurgical Labora
Crucible Steel Co. of America, Atha W
Harrison, N. J.

CARBIDE MILLING

Sir:

Please forward tear sheets of article "Economy Factors in Carb Milling" from the May 27 issue. found the article very interesting wish to keep it for reference.

P. H. HOFFMA
Chief Mechanical Drafts
Purcell Engineering Co. Pty. Ltd.
Auburn, N.S.W., Australia

BALL BEARING STEELS

Sir:

I have read the series of arti entitled "Metallurgical Aspects Ball Bearing Steels," published in Sept. 2, 9 and 16 issues, with gr interest and would appreciate rec ing a copy for my files and fut reference.

HANS J. HEIN
Plant Metallur
Pittsburgh Equitable Meter Div.,
Rockwell Mfg. Co.
Pittsburgh

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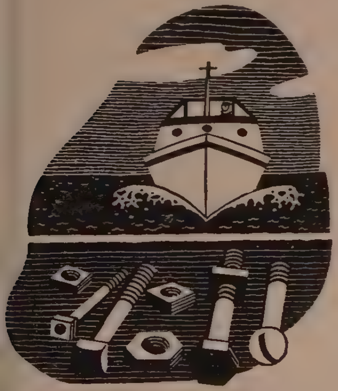

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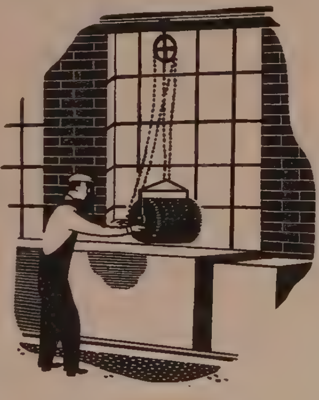

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LEBANON ALLOY AND STEEL Castings

CIRCLE L

the "Comparative Tool Steel Brand charts as they appeared in your Ju 29 issue.

B. F. GALLE
Production Manag

Ice Cooling Appliance Corp.
Chicago

NONINFLAMMABLE FLUID

Sir:

On the Newsfront page of the No 4 issue there is described briefly mobile, oily, noninflammable type flu for use as a pressure transfer mediu for aircraft hydraulic systems. W appreciate it if you will supply th name of the manufacturer of this ma terial so that further technical dat may be obtained.

L. P. SAUNDERS
Harrison Radiator D

General Motors Corp.
Lockport, N. Y.

● The fluid is a joint development of Mo santo Chemical Co. and Douglas Aircra Co., Inc. Suggest you may obtain furth information from either of these compani —E

CONDUIT PIPE

Sir:

We would like to contact manufac turers specializing in machines fo the manufacture of conduit pipes an expanded metal and would indeed ap preciate your sending us a list of sam

A. A. NAHMAN
Managing Direct

A. A. Nahman Organization of New Yor
New York

● A list of manufacturers has been fo warded.—Ed.

AS-CAST STRUCTURES

Sir:

We would appreciate receiving, at all possible, three tear sheets o the very excellent article written o "As-Cast Structures in Cast Steel, by M. F. Hawkes and B. F. Brow in the Oct. 14, 1948 issue.

S. L. GERTSMAN
Metallurgi

Dept. of Mines and Resources
Ottawa, Ontario

CONTINUOUS CASTING

Sir:

Will you kindly forward to th writer two copies of reprints of th article "Continuous Casting of Sem finished Steel," Aug. 19, 1948.

EDYTHE MOORE

Hydrocarbon Research, Inc.
New York

BLAST FURNACE ECONOMICS

Sir:

One of our foreign clients has r quested us to obtain for him thr copies of the article "Economics of t Blast Furnace" printed in the Sep 18, 1947, issue.

A. J. CARTER

Continental Commodities Corp.
New York

The
IRON AGE

Vol. 162, No. 23 December 2, 1948

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for ENAMEL · LACQUER · PAIN

Above: View showing five Mahon Finish Baking Ovens Installed on the Roof of an Automobile Plant. Parts are Carried on Overhead Conveyors.

Interior of One of the Mahon Roof-Type Finish Baking Ovens Illustrated Above.

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into your long range planning . . . Mahon engineers will
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will give your particular product the finest finish obtainab
an irreducible minimum cost per unit. You can turn your pro
of reducing finishing costs over to Mahon with complete
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with a wealth of technical knowledge and practical know
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a consultation at your convenience.

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RON AGE

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ESTABLISHED 1855

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December 2, 1948

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Failure By Formula

FOR many years the American public regarded the Communists as advanced liberals working sincerely for the improvement of society. Russia was the "Ultima Thule" of liberalism. With a prodigious reservoir of tolerance and a horror of the witch hunts that stained our early history, we were reluctant to handle the Reds roughly.

Our education has been slow. It goes back to 1934 when Litvinoff, hat in hand, begged F.D.R. to recognize Russia. He solemnly promised an end to all revolutionary propaganda to change our form of government by violence. The purges, the Spanish Civil War, the pact with Hitler, the wartime espionage in Canada, the cynical repudiation of treaties, the assimilation of Balkan kingdoms within the Soviet sphere, and finally the effort to expel us from Berlin have all made us a little sadder but certainly wiser.

This adversary has defined himself so convincingly that he leaves little room for doubt. He is bent upon our destruction. The seizure of union control, one of the essential techniques of Soviet conquest, has been fully revealed. Organized labor itself recognizes the danger to which it is exposed. The AFL and now the CIO have taken vigorous action to cleanse themselves of traitorous elements.

In spite of this encouraging though tardy action, it is clear that the Communists in departing have left behind them Trojan horses. These phony steeds are ideas. They are objectives and thinking patterns more dangerous to our society than armored columns or atomic bombs.

Here is Philip Murray, the militant head of the CIO—certainly no Communist—sounding off with a program which, if adopted in toto, would have approximately the same effect on our national health as a potassium cyanide cocktail.

Phil wants to remove 25,000,000 taxpayers from the rolls. Entirely aside from the effect this might have on the Federal budget, it would leave more than half the people of this country without any sense of financial responsibility for the government which serves them. To the majority of our people the Federal Treasury would become the source of benefits and no longer the symbol of a duty.

This labor leader would remove all excise taxes. These happen to be the most stable source of Federal revenue. Corporate and individual income taxes are highly volatile. In a period of business recession such taxes would decline first and drop most.

The effect of these proposals would leave the Federal tax structure as a reliable source of revenue only during periods of flush prosperity. With the first sign of an economic storm, the income of the Treasury would melt away. This means that earlier in the cycle, and to a greater degree, the government would have to resort to deficit financing.

Add to this price control, rationing, allocation, excess and undistributed profits taxes, a minimum wage of $1 an hour, mandatory plant expansion in basic industries such as steel and electric power, and you have a formula under which capitalism must fail and freedom cannot survive.

The Communists and the CIO thus arrive at the same goal.

Joseph Stagg Lawrence

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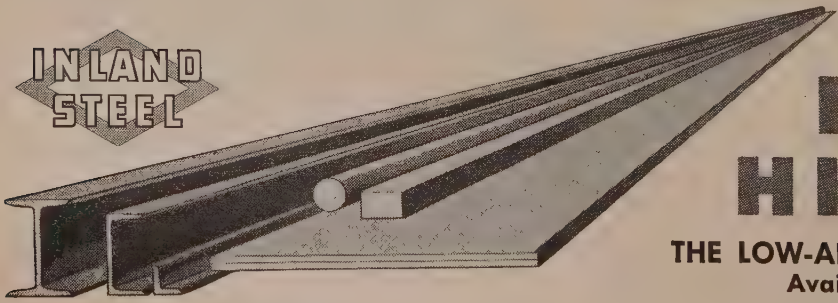
Hi-Steel meets the requirements of SAE Specification 950

INLAND STEEL



INLAND HI-STEEL

THE LOW-ALLOY, HI-STRENGTH STEEL

Available in Many Forms

RON AGE
ovember 30, 1948

NEWSFRONT

The revolution in Venezuela has substantiated the worry some people have had
t the permanency of iron ore projects in some South American countries.
ability of government has often meant the loss of invested capital in such
tries--not always, but often. Ask the oil firms. American steel firms which
ore exploration commitments in Brazil and Venezuela feel that they have
ing to worry about. But the recent change in Venezuelan government will cause
than a temporary pause--especially since it is the country where one of the
est iron ore jackpots has been found. It is not farfetched to say that this
e of affairs will react favorably to the Canadian iron ore discoveries.

Stainless steel gutters and downspouts are being offered to the housing
et at prices lower than conventional copper products by suppliers of roofing
rials. Stainless steel strip producers have been pushing the development.
ite the lower price for the stainless steel and the copper shortage, roofing
ractors are reported to be resisting the new product because of their un-
liarity with its forming methods.

The Norwegian government has asked the Economic Cooperation Administration to
rmine whether European recovery funds can be used to develop Norwegian de-
ts of high grade iron ore. Machinery and many other types of equipment are
ed. ECA is studying the situation, particularly the market for such ore in
country.

Despite tremendous advances in tooling, metal processing and materials han-
g, many auto officials believe the industry's best opportunity to cut costs
come either from design or greater productivity of labor or both.

Christmas sales are expected to furnish the acid test for the much discussed
allegedly over supplied household appliance industry. Sales for October of
year were 11 pct under October of last year. Retailers have substantial
ntories. If they don't move most of these machines before Christmas, manu-
urers of appliances are going to get serious cutbacks in January.

Construction of a limited number of railway cars for moving manganese ore is
t to be started by a Canadian car-builder. The cars will be earmarked for
rt to South African manganese ore deposits. Ore will then be tagged for
ed States stockpiles. Deal was worked out by the Dept. of Commerce, after the
Products Advisory Committee okayed the project.

Available isotopes of many elements have prompted considerable research into
trical semiconductors. One such experiment involved the use of radioactive
phorus introduced into germanium.

Construction of a winter road from Seven Islands, Quebec, toward the Labrador-
ec iron ore discoveries is under way. The unusually mild weather so far has
a help for the rough road which when completed will run inland about 150 mi.
will pave the way for construction of the railroad to run from Seven Islands
urnt Creek, 350 mi north. Method of financing the $200 million project (rail-
and start of drilling) may be announced soon by Timmins interests with whom
associated M. A. Hanna people.

The AVCO Manufacturing Corp. through radio station WLW of its Crosley Broad-
ing Corp. subsidiary recently put on a midwestern Scrap Metal Drive that
red the states of Ohio, Indiana, Kentucky and West Virginia. They solicited
aid of various 4-H and Future Farmers of America clubs in this area. The kids
to work in their spare time and came up with 12,000 tons of scrap in three
s. The return to them for their treasuries ran around $300,000.

There have been a number of uranium finds reported in various parts of Canada
ecent months. In fact the most promotional mining companies have been re-
ing indications by use of the Geiger-Mueller counter. So far none have been
en to amount to anything commercially. Yet they have been used in promotional
city to sell stocks.

Substantial tonnages of pig iron are finding their way into this country at
d $90 a ton delivered. Some Indian pig has been bought for as low as $60 a
delivered. Now a Brazilian firm is trying to sneak in some good tonnages at
f.o.b. Santos, Brazil. They haven't gotten any nibbles as yet. But they
sell either if they don't get what they ask.

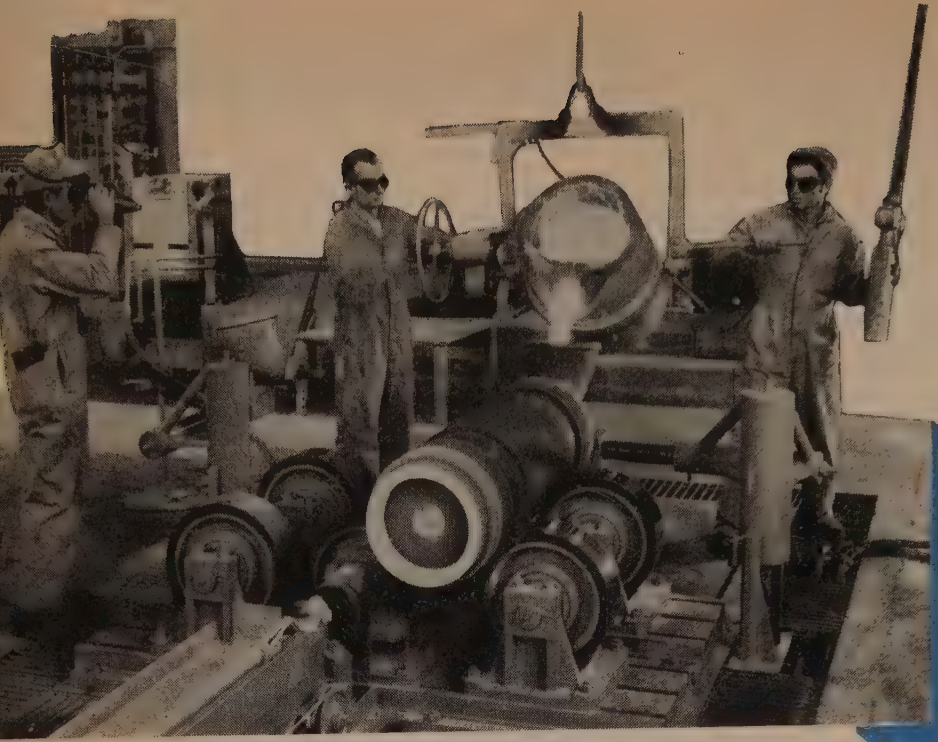


FIG. 1—Centrifugally casting in metal molds coated with a newly developed refractory material.

New Mold Coating Widens

A CENTRIFUGAL casting technique[1], for the production of metals in long tubular shapes, that offers important engineering advantages for many types of applications has been developed by the United States Pipe & Foundry Co., Burlington, N. J. Tubular castings of stainless steels, tool steels, alloy and carbon steels, alloy and gray cast irons, certain nonferrous alloys, and dual combinations of these metals are now in regular production at the Burlington plant.

The company has for several decades produced cast iron pressure pipe by the deLavaud process. In this technique, a water cooled metal mold is employed, the mold being slightly inclined, and the molten metal introduced by means of a trough extending the length of the mold, the latter retracting while it is spinning. A continuous stream of molten metal is pressed against the mold wall by centrifugal force to form a section of pipe.

A simple manner in which to generate a tubular body centrifugally is to employ a mold in a horizontal position and to introduce all of the metal from one end without the use of a retracting trough. When, however, a metal mold is employed in order to obtain the benefits of rapid solidification, the problem of distributing the molten metal over any appreciable length without the formation of serious surface defects has presented difficulties. This obstacle has now been overcome in the technique developed by U. S. Pipe & Foundry Co., see fig. 1. A thin refractory coating of controlled characteristics is applied to the interior surface of the heated metal mold in this new process, and this coating confers both traction and momentary insulation to the leading edge of the molten stream, preventing both skidding and excessive thinning of the advancing stream, as shown in fig. 2. The formation of surface defects such as laps, cold shuts and pinholes is prevented and long tubular bodies of constant wall thickness are generated, combining the benefits of rapid solidification with a simple casting procedure.

The coating is applied by a special type of spray gun which atomizes a water base slurry containing the refractory. The heat of the mold, about 400°F, causes an instantaneous evaporation leaving the atomized refractory droplets where they have been deposited.

The characteristics of the coating used depends on the type of metal being poured, the length and diameter of the castings, their wall thickness, and the particular coating composition in use. Typical slurry compositions contain from 500g to 1000g of silica flour and 10g to 40g of bentonite per liter of water. The surface roughness, thickness, friability and insulating qualities of the mold coating are controlled by modification of

---

[1] *This process is covered by U. S. Patent No. 2,399,606 granted to A. E. Schuh and Alfred Boyles Apr. 30, 1946.*

A metal mold centrifugal casting technique employing a special type of refractory coating which permits more exact and orderly distribution of metal in the spinning mold is explained by the author. This development makes commercially feasible the production of long tubular shapes in stainless, tool steels, and nonferrous metals, as well as the usual range of cast steel and cast iron.

By JOHN ANTHONY
Eastern Regional Editor,
THE IRON AGE

Centrifugal Casting Use

he slurry composition and the method of appli-ation to the mold.

The roughness of the coating, see fig. 2, is con-rolled by the angle of the spray nozzle, the air ressure used, the distance of the nozzle from he wall of the mold and the thickness of coating eposited within a given time.

The mold must be recoated for each casting, ut residues from the previous cast are readily removed by a jet of air or wire brush. Despite its friability, which may be controlled by adjustment of slurry composition, the coating is not washed away by the force of the metal entering the mold. Nor is there any marked crushing effect on the nubby protuberances that control the flow of metal.

Pouring is done from a spout at one end of the mold and the metal is distributed along the

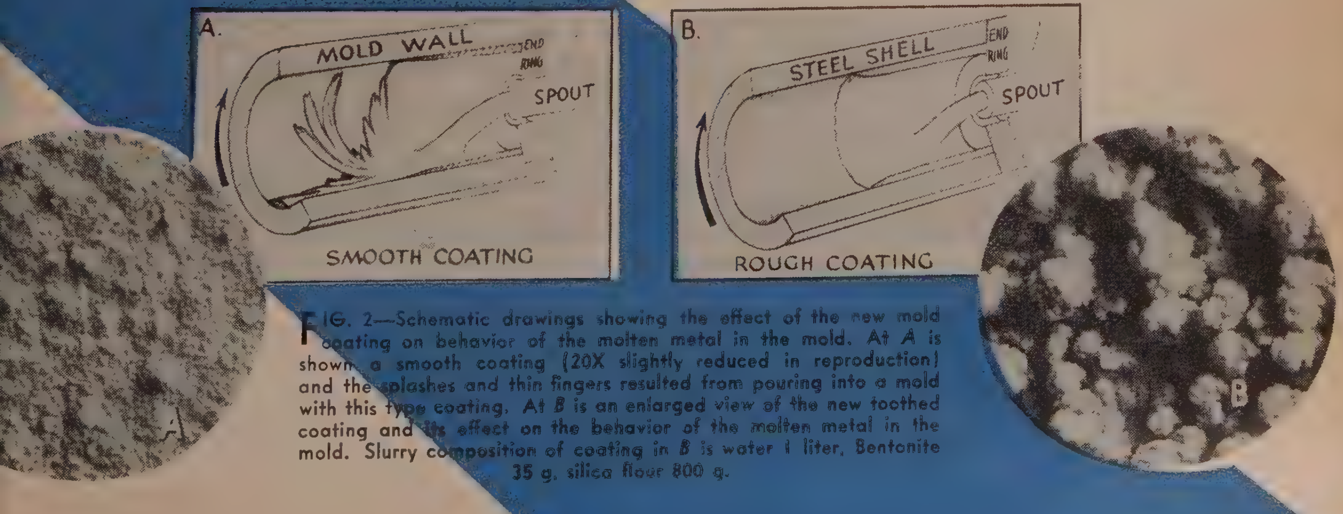


FIG. 2—Schematic drawings showing the effect of the new mold coating on behavior of the molten metal in the mold. At *A* is shown a smooth coating (20X slightly reduced in reproduction) and the splashes and thin fingers resulted from pouring into a mold with this type coating. At *B* is an enlarged view of the new toothed coating and its effect on the behavior of the molten metal in the mold. Slurry composition of coating in *B* is water 1 liter, Bentonite 35 g, silica flour 800 g.

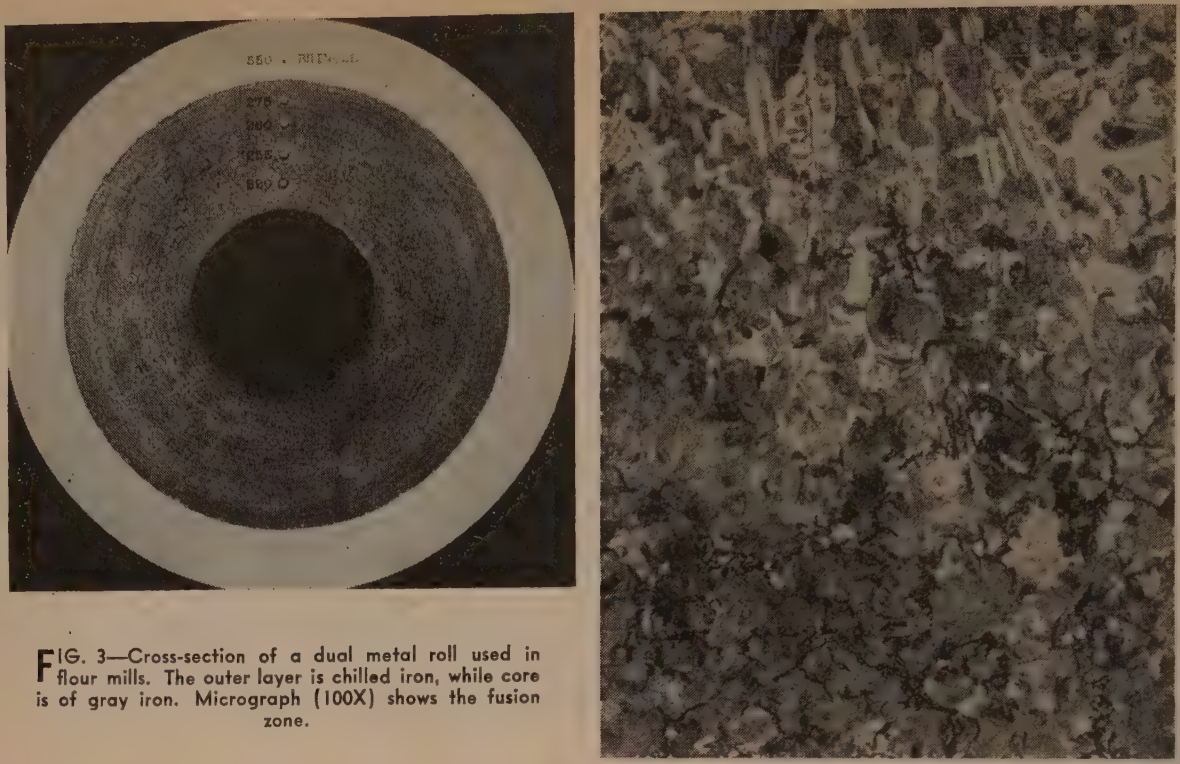


FIG. 3—Cross-section of a dual metal roll used in flour mills. The outer layer is chilled iron, while core is of gray iron. Micrograph (100X) shows the fusion zone.

length of the mold by means of centrifugal force. Temperatures of the metals being cast are substantially the same as conventionally employed in static casting.

The average coating thicknesses required for different metals and casting sizes may range from 0.01 to 0.08 in. Multiple passes of the spray lance may be necessary for the higher range. The number of coating protuberances may range from 10 to 50 per lineal inch, with a preferred range of from 20 to 25 per in. The average height of protuberances may range from 0.005 to 0.050 in.

Perhaps one of the most significant applications of this modified centrifugal casting process is the production of tubular shapes combining two metals metallurgically bonded and concentrically cast. Such castings, identified as dual metal, take advantage of the individual characteristics of each of two metals in combination. High cost metals such as Stellite, Hastelloy, stainless steels, tool steels or other highly alloyed metals can in effect be clad on lower cost metals in tubular shapes.

Many combinations of dual metals are already in production by the United States Pipe & Foundry Co. Heavy wall chilled iron grinding rolls with a gray iron core, shown in fig. 3, are being produced for severe service requirements in the flour, soap, ink, chocolate, grinding and abrasives industries, and for some applications in the steel industry. The white iron shell of uniform and controllable depth maintains its high hardness throughout the chilled shell. The heavy gray iron core is also relatively uniform in hardness and provides the roll with strength and machinability. Fig. 3 shows the microstructure of the fusion zone of the roll.

Dual metal cylinder liners for diesel engines have been produced with a mild steel outer shell for strength, and gray iron on the inside for wear resistance. Tests have shown that the dual metal liners have many times the impact resistance of conventional cast iron liners. In addition, on railway diesel engine cylinder liners, the weldability of the steel shell permits easy attachment of a light weight cooling system if desired. Fig. 4 shows dual metal cylinder liners and structure.

Centrifugally cast steel shells have been lined with many other metals including Stellite, Hastelloy, Monel, 14 pct silicon iron, Ni-Hard and Ni-Resist.

Copper-lined steel tubes, shown in fig. 5, have been cast by this centrifugal process for drawing into chemical and refrigeration tubing. The strength of the bond permits billet reduction into small diameter tubing. Less than 0.50 pct iron is picked up by the copper and this without harmful effect on heat conductivity. Diffusion of copper into the steel is negligible, as shown in fig. 5.

Other typical dual metal combinations include copper or Monel-lined stainless steel for chemical pipelines, Monel-lined alloy steel, Ni-Resist inside cast iron and others.

In producing dual metal castings each metal is melted in a separate furnace. The outside metal is poured into the spinning mold and followed by a suitable molten flux. The inside metal is poured after the proper time interval related to the respective melting points of the metals to be bonded and to the wall thickness being cast.

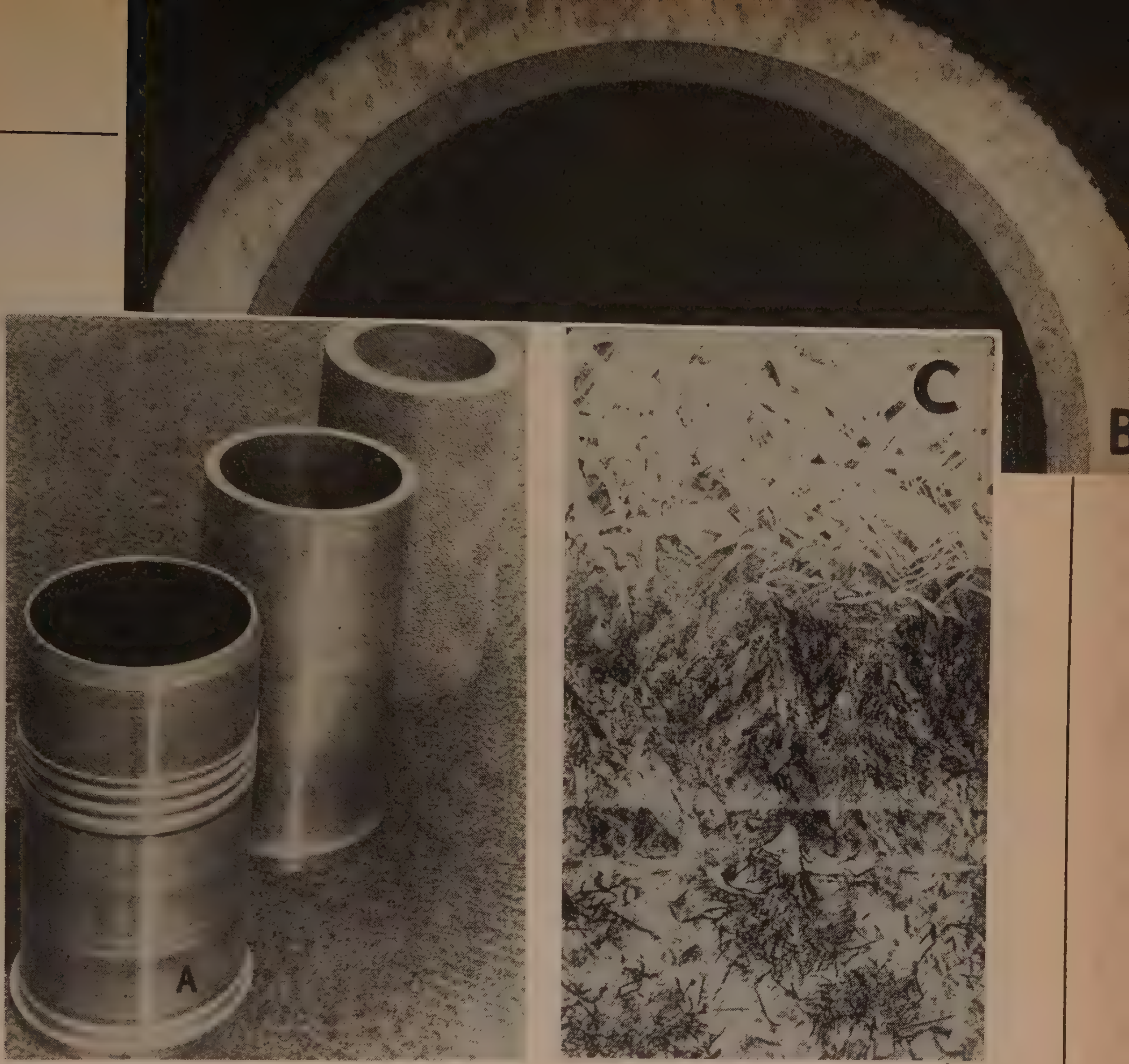


FIG. 4—Dual metal cylinder liners (A) in as cast, rough machined and finish machined condition. The outer shell is cast steel, and the core gray iron. A cross-section view of a liner is given at *B*, while at C is a micrograph (100X) across the fusion zone.

All of the fluxing compound is displaced to the inside surface of the casting. Spinning is then continued until the core metal is frozen. The thicknesses of the outside shell and of the metal core are controlled by weighing each ladle of metal.

With proper timing, the bond between the metals is stronger than the metals themselves because the basic requirements of a weld are satisfied. The interfacial surfaces are clean at the moment of contact, thus permitting chemical forces of solution to act. In most combinations of metals the proper time interval before pouring the inner metal is reasonably elastic, although diffusion or mechanical intermingling may take place if the interval is too brief, and welding may not occur if it is too extended. The process is not applicable to combinations of metals in which the melting point of the outer metal is substantially below that of the inner metal.

Certain grades of stainless steel not offered in the form of tubing by the seamless mills can be drawn from centrifugally cast hollow billets. These difficult-to-pierce grades include AISI 309, 316X, 317, 303 and other less common analyses. Type 303 stainless is a free machining grade not offered in seamless tubing.

Metal mold centrifugally cast heavy wall carbon, alloy and stainless steel tubing, and tubing in large diameters beyond the limits of seamless mills are being produced regularly. Test results have shown that the mechanical properties of tubing drawn from centrifugally cast billets are the equivalent of properties of tubing from conventional pierced billets.

From an economic standpoint, centrifugally cast tubes of conventional carbon steels cannot compete with such mass production methods as used for thin-walled seamless or welded tubing. In alloy and stainless, however, the process is definitely competitive, particularly as the wall thickness increases. Tungsten and cobalt steels have been cast centrifugally. It seems reasonable to expect that this method will be used for tubular shapes of some of the special alloy steels that have been developed for jet propulsion engines. Tool steel tubing, not heretofore available in that form, can be cast centrifugally.

Steel castings produced to date range from 3 to 24 in. OD. Lengths are up to 8 ft in the middle diameter range with wall thicknesses ranging from ⅜ to 2 in. Depending on the diameter and on the end use requirements, machining allowances of from ⅛ to ¼ in. are employed.

Practically all of the special and high alloy irons have been produced at Burlington by centrifugal casting. Chrome-nickel irons, molybdenum-vanadium irons, white irons, malleable, Ni-Hard, Ni-Resist and others have been cast. Batch melting facilities by induction or crucible furnaces offer flexibility. Cupolas are employed only when volume and iron composition justify their use.

Cast iron rolls for grinding and crushing, food processing, steel mill run out table rollers and diesel engine bearing backs are being cast to designated size and wall thickness. These castings are 4 ft and more in length, with outside diameters ranging from 3 to 30 in. Wall thicknesses may range from under half an inch to several inches.

During the war, United States Pipe & Foundry Co. made the casting stock for piston rings for the Packard-Merlin aircraft engine. The tubes were white iron as cast, converted by heat treatment to a pearlitic malleable structure. This type of ring increased the operating time appreciably between engine overhauls.

Now piston ring castings more than 5 ft long are being produced for slicing and finish machining without any previous rough machining. Castings are made to clean up at a maximum depth of cut of 0.050 in. Piston ring and cylinder liner castings are gray as cast, and require no heat treatment. Resistance to wear is assured by freedom from chill and the absence of all but traces of free ferrite in a pearlitic matrix. Tensile strength ranges from 35,000 to 65,000 psi, depending on the composition.

Higher strength ring and liner castings can be produced as white iron, to be heat treated to a pearlitic malleable structure, or from an acicular matrix.

Present production facilities for centrifugal castings at Burlington include Ajax electric furnaces, cupolas, oil-fired reverberatory furnaces and holding furnaces.

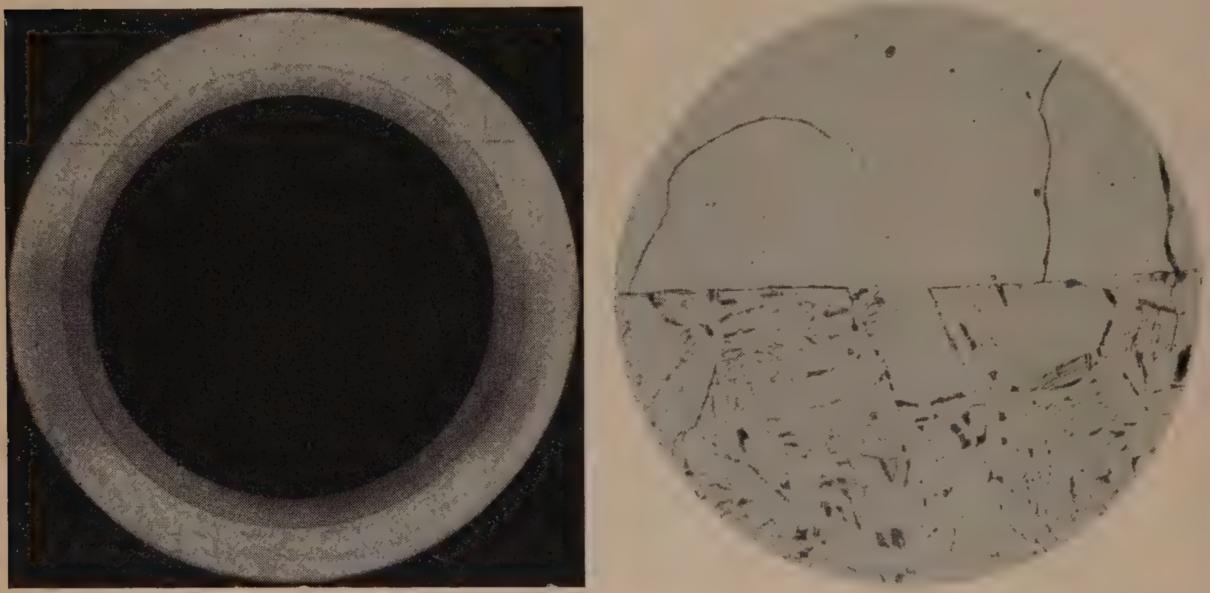


FIG. 5—Dual metal tube with a copper inner layer bonded to a low carbon steel outer shell. The microstructure (100X) of the fusion zone is also shown. The upper section of the micrograph is the copper layer; the lower half is cast steel

A new piston ring and cylinder liner plant is nearing completion which will also produce heavy cast iron cylinders for the roll and heavy liner field. Total production from this plant is expected to exceed 1500 tons a month. Melting facilities will include two new Sklenar furnaces, as well as cupolas.

A new and fully equipped experimental foundry for centrifugal castings has just been completed. The development program for the experimental foundry includes the extension of the present dimensional limits for centrifugal castings, exploration of the casting of nonferrous and light metals, development of additional dual metal combinations, and various refinements of casting methods and processes. The demands of the experimental work under way require the experimental foundry to operate on a two-shift basis.

Can Your Plant Do Its Own Plating?

Many small manufacturing plants have incorporated electroplating departments into their operations, often very advantageously. But in many instances, the action, instead of providing savings and smoother production scheduling, has proved a costly blunder, largely due to too little forethought and knowledge of what is involved. This article describes the dangers likely to be encountered in setting up a captive plating plant and discusses the considerations to be weighed in taking such a step.

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ALMOST all consumer metal products require a finish — protective, decorative or both. However, the small manufacturing plant usually includes only metal forming and assembly equipment. Plating and finishing, which was at one time considered an unimportant side issue, is an unfamiliar operation, so the work in most cases is sent out to be finished.

Today, there is almost universal recognition of the fact that the finish is important and real attention is paid to it. It is still true, however, that with many small manufacturers, the attention consists of demand for (1) a "nice" job, (2) rush deliveries and (3) a cheap price. What is generally meant by these three demands?

(1) A "nice" job means a bright plate, free from scratches, emery lines and finger marks; and often with no specifications for thickness of deposit being given.

(2) Rush deliveries mean that the plater picks up work in the morning and delivers it next day, or even same afternoon.

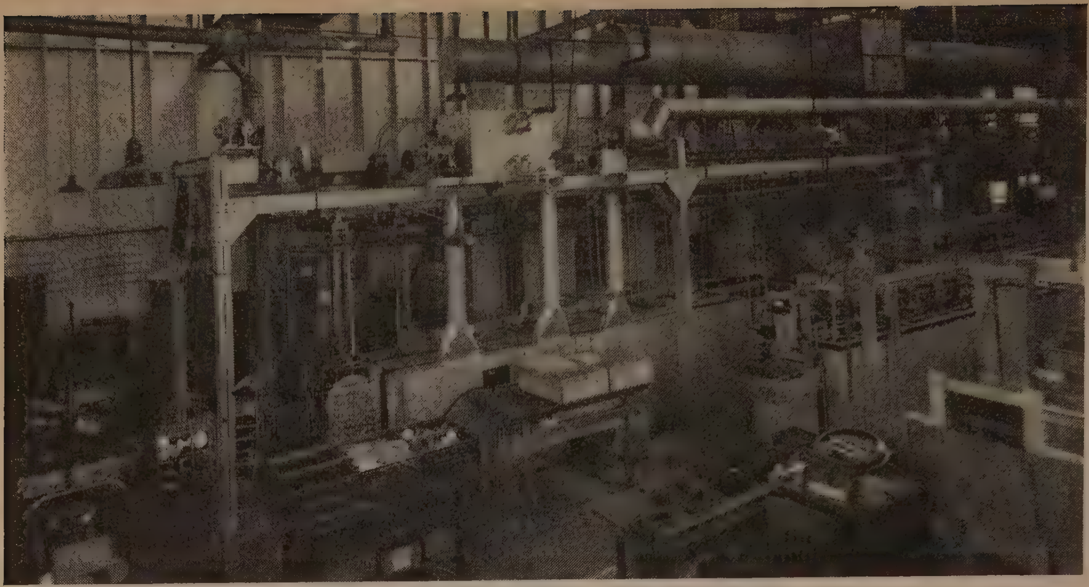
(3) A cheap price means the lowest bidder.

The result of this system, in countless cases, has been a thin skimped plate with little resistance to wear or corrosion along with broken delivery promises and upset manufacturing schedules. And frequently when the plater found out he was losing money and dropped the job, a new plater had to be found and the same dizzy round repeated.

Many companies, after experiencing these difficulties a few times, decided that platers, without exception, were no good. So, in order to coordinate production and eliminate returns from customers they installed their own plating departments. Also, they expected to save money by eliminating the plater's profit.

One of the outstanding results of this policy, which was especially evident during the war when facilities were very short, was the appearance of hundreds of manufacturers' plating plants for sale, a substantial proportion of which ended up under the auctioneer's hammer. The reasons were numerous and varied, but fall mainly into the following categories:

(1) The output was unsatisfactory in quality. The management was unfamiliar with plating



PARTIAL view of a Munning type full automatic plating conveyer installation used in conjunction with an H-VW-M heavy duty semi-automatic unit.

technique and could not exercise the proper supervision over the department which was entrusted to a plating foreman who did not measure up to the job.

(2) Rejections were just as heavy as they had been when plating had been done outside, but the cost had to be absorbed by the manufacturer instead of being passed back to the plater.

(3) The plating plant was set up for peak, wartime or seasonal production. During off-seasons this department, being largely or wholly idle, proved extremely costly in overhead and retention of the key personnel.

(4) Costs turned out to be substantially higher than job platers' prices.

The dilemma is not really insoluble, as the above recital seems to indicate. Like other manufacturing problems, it can be solved by taking into consideration all of the factors involved. These determining factors are briefly: The annual dollar volume of plating work placed outside; the production requirements during seasons and between seasons; the cost of a plating and polishing plant capable of turning out the work; the cost of maintaining the key personnel throughout the year, in dull as well as busy seasons; and a calculation of the probable cost of plating and finishing the work inside, including the proper share of overhead for the department in repair and upkeep, depreciation and other items.

To take a hypothetical case, a manufacturer producing chrome - plated plumbing fixtures, spends $25,000 a year for outside polishing and plating. The minimum basic requirements for a plating and polishing department of the smallest practical size are shown in table I.

Note that this total does not include materials, fuel or incidentals, or any general labor whatsoever; and that power is standby, or the cost with an idle plant only. Therefore, it would cost a minimum of $13,000 a year to maintain this department without turning a wheel.

During the months when the plant is operating

TABLE I

Minimum Basic Expenses for a Polishing and Plating Department

Breakdown	Annual Cost
Labor (skeleton crew only)	
Foreman Plater (working)	$4000
Tank Operator (who can replace the plater for a short time in an emergency)	2500
Foreman Polisher (working)	3500
Plant Overhead	
Rent (1000 sq ft at 75c)	750
Power (standby only)	1000
Depreciation (10 pct of $15,000, estimated cost of minimum plant)	1500
	$13,250

TABLE II

Estimated Costs of the Minimum Plating Department Operating at Capacity

Breakdown	Cost per Month
Labor:	
Foreman Plater (working)	$333
Tank Operator	210
Tank Helper	170
General Help	150
Foreman Polisher (working)	300
Polishers (two)	500
Maintenance (part-time work)	75
Materials	600
Overhead:	
Rent	62
Power	175
Depreciation	125
Fuel (for heat and solutions, water, etc.)	85
Insurance, all types	85
Miscellaneous: Proper share of general factory and administrative overhead, etc.	100
	$2970

BRIGHT zinc plating in a radio parts plant.

to capacity, say at $4000 per month, the costs would approximate the figures in table II.

These figures would apply only to the peak periods, say at the most, three months of the year. The rest of the year would probably be run at operating rates varying from 25 to 50 pct, showing at best a breakeven, and at worst, which at least three months would show, heavy losses. In this particular instance, therefore, to put in a finishing department would be decidedly uneconomical.

To set a definite figure for all plants at which it would pay to install a metal finishing department is impossible, as the figure would vary too widely with the product and local conditions. Moreover, there are many imponderables which must be considered—such as the ability and know how to supply adequate supervision of chemical processes, wholly foreign to the mechanical operations practiced in metal fabrication; the availability of help skilled in plating and polishing; and the possibility of manufacturing and finishing for stock in off seasons — all of which will have their effect upon the operation of a plating department. From general practice, however, it seems to be worthwhile for manufacturers to install their own plating departments only when they find their bills for outside work approaching $50,000 per year. At or above this range, it becomes economical.

Moreover, the installation of such a department calls for the exercise of careful judgment under competent advice, and the following cautions should be observed:

(1) Do not put in a plating department unless you are sure to have enough work for it.

(2) If you decide to put in such a plant, keep it down in capacity to 50 pct or, at the most, 75 pct of the peak seasonal demand.

(3) Be sure to get experienced and competent help for your key personnel—your foreman plater and foreman polisher.

(4) When figuring your own departmental plating costs, do not omit a number of little items on the ground that you have the facilities anyway. Perhaps your fire insurance and compensation insurance rates will go up. Careless or sloppy cost-finding practice can be very misleading and damaging.

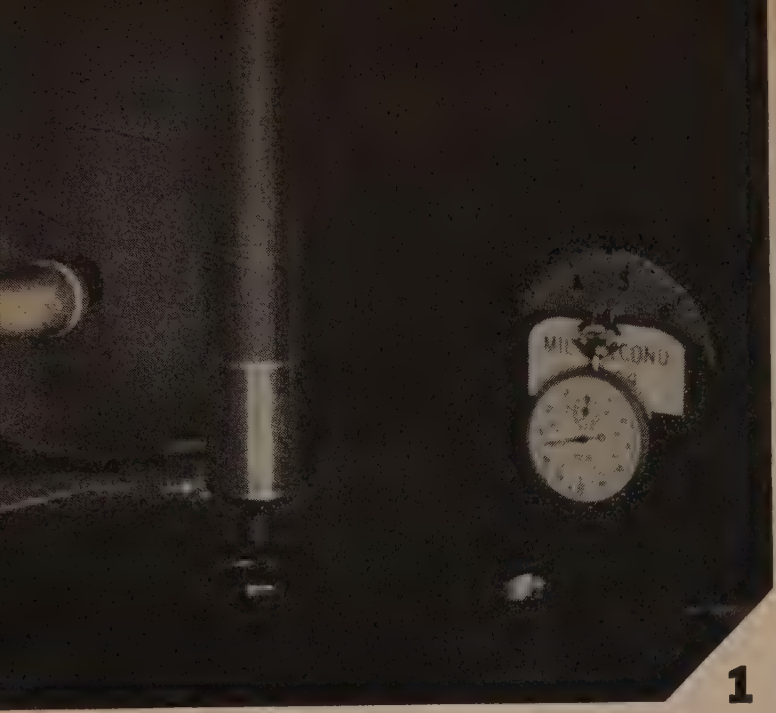
(5) Even with good equipment and good men, do not be surprised if you have headaches. Plating is full of them.

(6) At peak seasons, there will be more work than the department can do. Send this work out to preferably one, or at the most, very few outside job platers.

(7) Do not take the lowest bidder for that reason alone. Make sure that the plater is thoroughly competent and has proper and adequate equipment. Give him definite specifications and see that they are met.

(8) Take your competent job plater into your confidence. Go over your problems with him and get his suggestions. He can often reduce your costs.

(9) After finding a competent plater, do not switch around unless it is absolutely necessary. Your plater will become thoroughly familiar with your class of work and his methods will improve, his quality will improve, rejects will drop to a minimum and costs may be reduced. You can use your own plating department as a yardstick for costs and quality of plated work.



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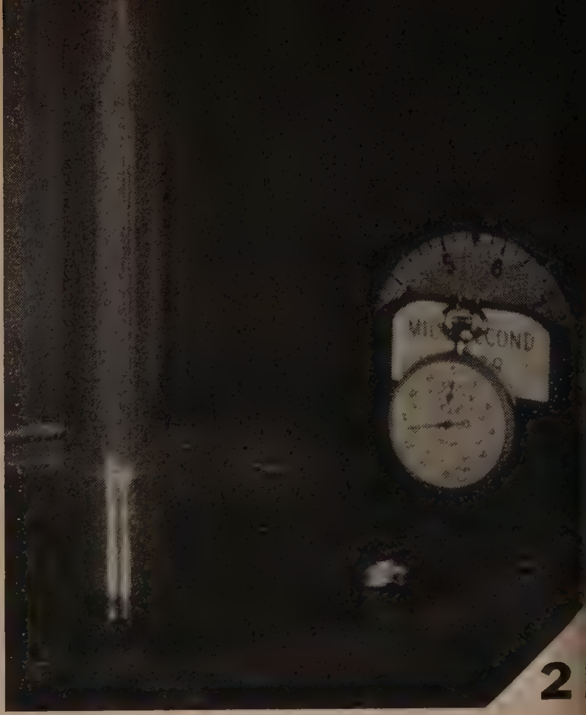

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• • Sequence shows the nonuniformity of the extrusion rate. The time lapse between each of the frames numbered (3), (4) and (5) is 0.018 sec, yet between (3) and (4) the tube length has extended roughly twice as fast as between (4) and (5).

High Speed Photos Reveal Extrusion

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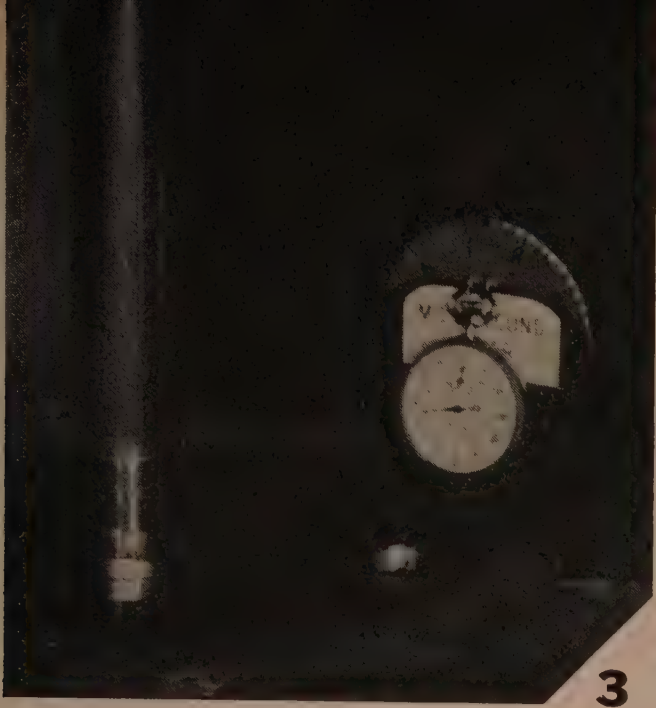
WHAT are believed to be the first slow-motion pictures of aluminum impact extrusion, shown in the accompanying illustration, have drawn considerable comment centered on the apparent nonuniform slowing of the extrusion rate as the tube reaches approximately the halfway point in traveling up the punch.

The operation photographed was performed in a 150-ton straight crank press. Die diameter was that of the outside of the collapsible tube to be formed. The punch diameter determined the ID of the tube. The slugs, which are fed automatically into the press at room temperature, were blanked from 99.7 pct purity aluminum sheet. Impact of the punch formed the tube wall by upward extrusion, and also formed the tube neck and orifice in the die cavity. Only 0.069 sec elapsed during the filming of the sequence (note the readings on the millisecond meter with no perceptible change in the second hand of the stopwatch) and only 0.055 sec passed from the time the punch struck the slug until the extruded tube was fully formed.

Alcoa engineers were intrigued when the film showed the extrusion rate to slow abnormally after the tube had been extruded approximately halfway. Flow of metal had previously been thought to follow the effects of harmonic motion.

An explanation of the phenomenon can be found in a study of the pressure curves determined at Edgewater with Baldwin SR-4 strain gages and oscillographic recording equipment. The highest pressure during the extrusion cycle is at the point of initial extrusion, after which there is a rather rapid drop in loading until approximately half the extrusion cycle has been reached. Then, there is a rather level plateau in the load curve which does not break off until extrusion is completed. It seems very possible that the rapid rate observed in the film during the first half of the extrusion cycle is the result of two mechanical actions, and the rate of the last half of the extrusion the result of only one. The



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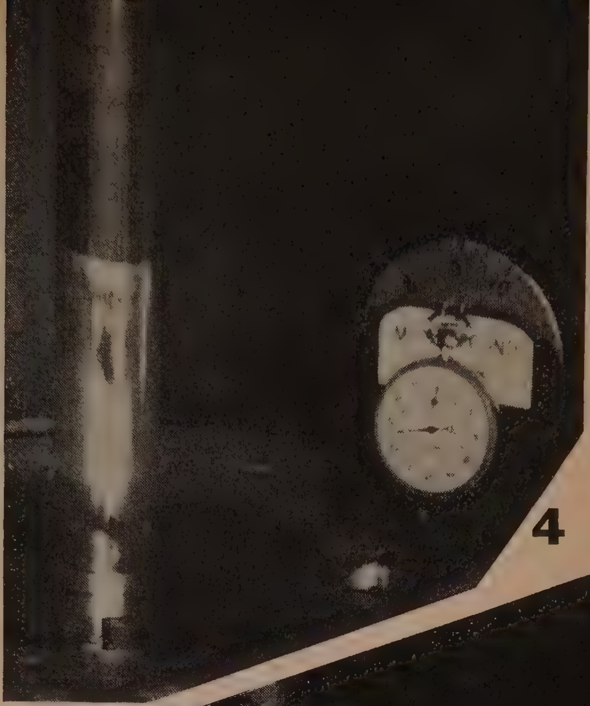

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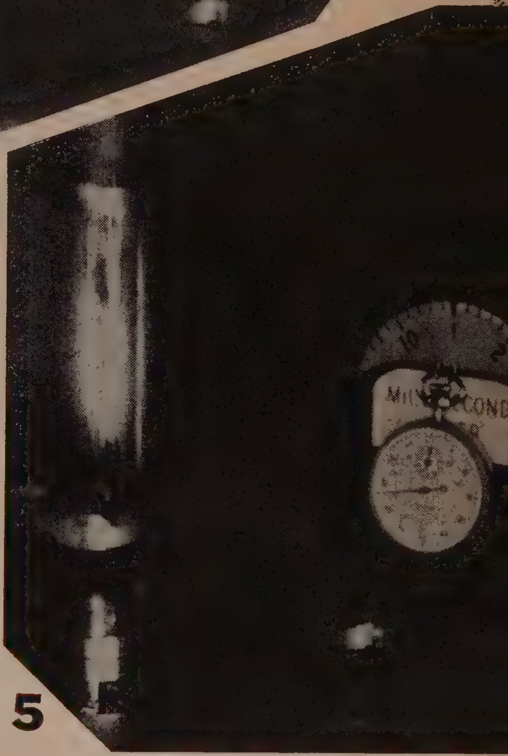
Rate Phenomenon

Frames from a high speed film of aluminum impact extrusion have created considerable interest in revealing a nonuniform slowing of the extrusion rate. This article describes the phenomenon and suggests that it is due to elastic effects in the press operating in conjunction with the expected harmonic motion imparted by the crank.

more or less abnormal speed at the beginning is caused by a combination of the harmonic motion imparted by the crank and the strain being relieved in the press as the pressures are lowered at the midpoint of the extrusion cycle.

It is known that there is a considerable strain in the press, resulting in elongation of the tie rods and the frame, at the high pressures reached during the start of the extrusion, and one might consider this a sort of rubber-band effect tending to accelerate the extrusion speed while these high pressures are decreasing. Once a rather uniform pressure is reached, the rate of extrusion is governed entirely by the harmonic motion of the extrusion punch.

Photographs of the extrusion were taken by Henry M. Lester at the Edgewater Works of Aluminum Co. of America.



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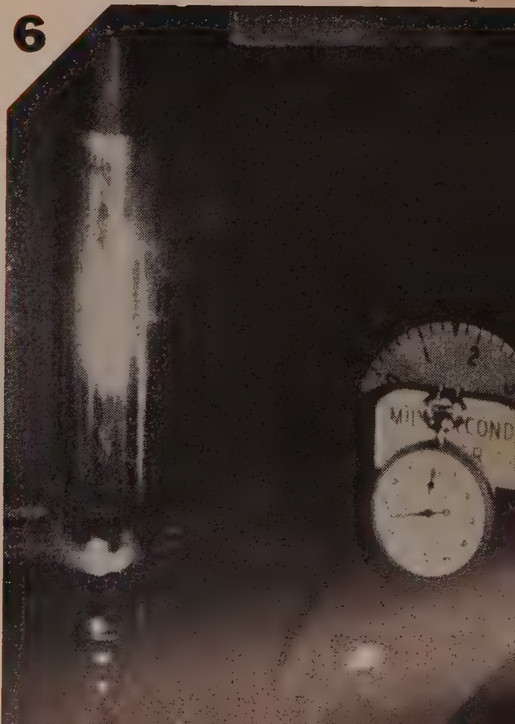

Operational Formulas for

By JOHN H. MORT
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England

WARTIME shortages of tin gave considerable impetus to electrolytic methods of tinning steel strip, since by such processes only 0.25 lb of tin per base box is possible in contrast to about 1.5 lb by hot dip methods. Developmental work on electrolytic procedures progressed so satisfactorily that all the principal tinplate producers have adopted the method, and electrolytic production has expanded to the extent that American statistics for 1946 showed electrolytic tinplate production to total 896,323 net tons, or 34 pct of the country's output.

In the development of electrotinning in the United States several lines of procedure were investigated. First, there was the question of whether an alkaline or acid electrolyte yielded better results. The number of acid plants constructed would indicate that this is the type preferred by most manufacturers and at the present time most of the tinplate coated electrolytically is the product of acid plants. Secondly, the best method of mechanical manipulation of the strip in its passage through the electrolyte had to be determined. Some development engineers were inclined toward an arrangement, fig. 1, in which the strip traverses a straight horizontal line through the electrolyte for plating on one side and then reverses its direction to again follow a straight line on the horizontal plane through a second bath for tinning on the opposite surface. Others prefer a system by which the strip follows an undulatory course through a single bath, fig. 2, for simultaneous coating of both sides. This second alternative has come to be regarded by a majority of manufacturers as standard practice.

It is practicable, where desired, to coat one side only by both the arrangements shown in figs. 1 and 2, which in the ensuing discussion will be termed type *X* and type *Y* respectively. Hot dipping, on the other hand, is impracticable for single side applications. To coat one side only with a type *X* mechanism, the upper series of cells are bypassed or taken out of operation

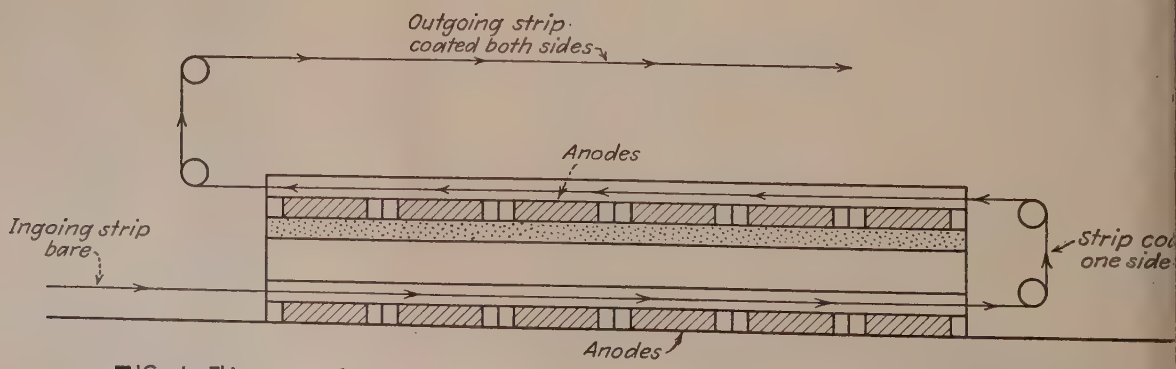

FIG. 1—This system of passing steel strip through electrolyte for tinning uses two straight horizontal passes through separate baths.

Electrotinning Steel Strip

Tinplate production by electrodeposition has developed over the past six years into a major production technique. This article summarizes the conclusions to be drawn from developmental and production work and reviews the operational formulas involved. Special slide rules and nomographs, designed to speed or eliminate time-consuming calculations, are described and the methods by which calculations shortcuts can be designed for and applied to electrotinning line control are discussed.

while the strip passes through. Such a method halves the length of strip immersed in electrolyte. On a type Y installation, coating on a single side can be effected by removing those anodes facing the side to be left uncoated. The length of the contact path is not affected by this removal of anodes, but for a given cathode current density, the amount of tin deposited in a given time is halved since only half the anodes are functioning.

The relative merits of acid and alkaline methods are still a topic of debate in the United States even after six years of commercial operations of both types of lines. Also, although Mr. Mort suggests it, tinning on one side only has not been widely or successfully practiced on a commercial scale.

The diagrams of electrotinning lines, figs. 1 and 2, apply only for acid electrolytes as used by American producers. When alkaline baths are used, the vertical loop is adopted with the strip threaded so that each face of each anode can deposit tin on it. Consequently, for the same number of anodes, there are twice as many strands of strip in a vertical alkaline line.—Ed.

When coating on one side only, types X and Y are on a par insofar as length of contact path is concerned; but when both sides are being tinned, the path length in type X must necessarily be double that in type Y in order to equate the output, provided all other factors are equal.

In an acid bath, tin is precipitated in the stannous form, Sn^{++}, whereas from an alkaline bath it is in the stannic state, Sn^{++++}. The effect on electric consumption is that in acid lines 4.8814 lb of tin are deposited per 1000 amp-hr while only half that weight, 2.4407 lb, are precipitated in an alkaline bath for the same expenditure of electrical energy. Another advantage of acid baths is that electrical efficiency approaches 100 pct while in alkaline solutions the efficiency falls to lower levels. The lesser weight of tin precipitated per unit of current combined with lower efficiency explains in large measure why alkaline baths are not favored by tinplate manufacturers. Also, much higher current densities can be used in acid baths so that

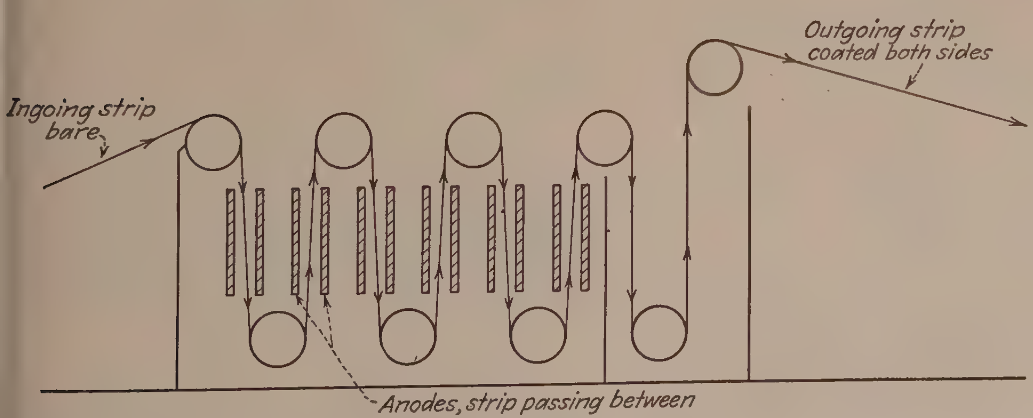
Ingoing strip bare
Outgoing strip coated both sides
Anodes, strip passing between

FIG. 2—Vertical loop system, in contrast to the installation in fig. 1, uses a single bath and coats both sides of the strip simultaneously.

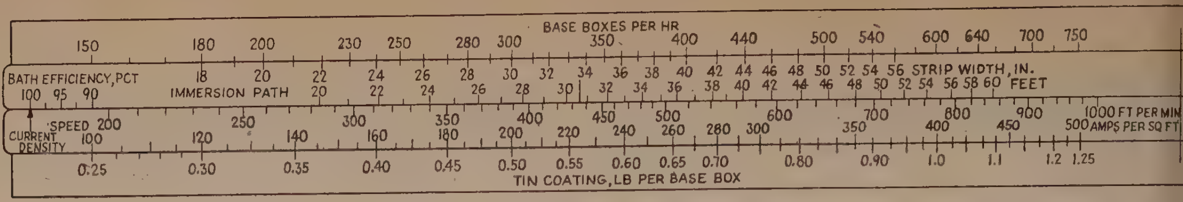
BASE BOXES PER HR
150 180 200 230 250 280 300 350 400 440 500 540 600 640 700 750
BATH EFFICIENCY,PCT
100 95 90
IMMERSION PATH
18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56
STRIP WIDTH, IN.
FEET
SPEED
200 250 300 350 400 450 500 600 700 800 900
1000 FT PER MIN
CURRENT DENSITY
100 120 140 160 180 200 220 240 260 280 300 350 400 450
500 AMPS PER SQ FT
0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.80 0.90 1.0 1.1 1.2 1.25
TIN COATING, LB PER BASE BOX

FIG. 3—Special slide rule permits rapid equating of electrotinning factors. Seven variables are scaled so that any two unknowns can be determined.

higher production per unit of plant is possible.

Process Formulas

The formula for determining the hourly rate of deposition of tin at the cathode or strip may be written

$$w = \frac{D\,E\,e}{1000} \tag{1}$$

where w = rate of deposition in lb per sq ft per hr,

D = cathode current density in amps per sq ft,

E = electrochemical equivalent in lb per 1000 amp-hr (4.8814 for acid, and 2.4407 for alkaline, baths)

e = efficiency of electrolyte, pct in decimal form.

It is essential to know the time during which the strip is immersed in the electrolyte and this may be derived from

$$T = \frac{60\,L}{v} \tag{2}$$

where T = immersion time in sec,

L = total length of immersion path in ft,

v = tinning speed in ft per min.

In those cases where it is necessary to determine the time before the speed can be fixed, the time can be computed by means of one of the two following formulas, depending on which is appropriate:

For type *Y*, coating on both sides,

$$T = \frac{8.265\,p}{w} \tag{3}$$

For type *Y* coating one side only, or for type *X* coating one or both sides,

$$T = \frac{16.53\,p}{w} \tag{4}$$

where p = weight of tin coating in lb per base box.

The rate of production is readily calculated from the expression

$$n = \frac{v\,b}{43.556} \tag{5}$$

where n = number of base boxes coated per hr,

b = width of strip in inches.

Should the area coated per hr be required, it is derived from

$$C = 5\,v\,b \tag{6}$$

where C = area of strip coated per hr in sq ft.

The rate of tin deposition at the cathode, i.e., on the strip, is computed from

$$h = n\,p \tag{7}$$

where h = rate of deposition in lb per hr.

Generally the liberation of tin at the anodes is not exactly balanced by the deposition at the cathode and the rate at which the weight of the anodes diminishes is somewhat higher than the rate of deposition.

The formula for calculating the current flow (the energy expended only in electrolytic action and not including power requirements for mechanical equipment) is

$$I = \frac{1000\,h}{E\,e} \tag{8}$$

where I = current flow in amps.

Tinplate users usually specify tin coating requirements in lb per base box. But thickness may also be expressed in microns (25.4 microns = 0.0254 mm = 0.001 in.). To convert lb per base box to microns, or vice-versa, the following expressions apply:

(9) $\mu = 3.08\,p$ (For material tinned on one side only),

(10) $\mu = 1.54\,p$ (For material tinned on both sides).

In both equations, μ = thickness of tin coating, measured on one side, in microns.

Use of the Equations

To illustrate the use of these equations are the following examples:

Example A: For an acid plant of type *Y*, let it be supposed that the plating section comprises 8 strands of 4 ft each, making a total contact length of 32 ft. The strip is to be coated on both sides and the weight of tin applied is to be 0.65 lb per base box. Cathode current density is 200 amps per sq ft; width of the strip is 30 in.; and the electrical efficiency is 98 pct.

Since the strip is coated on both sides, equation (10) applies. Therefore, $\mu = 1.54 \times 0.65 =$ 1 micron. By equation (1), the value of

$$w = \frac{200 \times 4.8814 \times 0.98}{1000}$$

= 0.959 lb per sq ft per hr. Equation (2) cannot be used at this stage as the speed is still unknown, but the values of p and w are known and equation (3) is applicable. Hence the immersion time is found to be

$$T = \frac{8.25 \times 0.65}{0.959} = 5.60 \text{ sec.}$$

The path length is fixed at 32 ft and, applying equation (2),

$$v = \frac{60 \times 32}{5.6} = 343 \text{ ft}$$

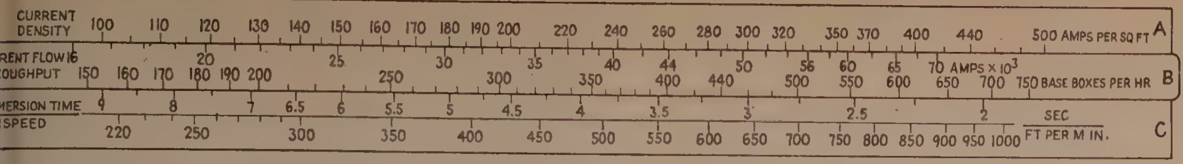
CURRENT DENSITY
100
110
120
130
140
150
160
170
180
190
200
220
240
260
280
300
320
350
370
400
440
500 AMPS PER SQ FT
A
RENT FLOW
16
20
25
30
35
40
44
50
56
60
65
70 AMPS × 10^3
OUGHPUT
150
160
170
180
190
200
250
300
350
400
440
500
550
600
650
700
750 BASE BOXES PER HR
B
MERSION TIME
9
8
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
SEC
SPEED
220
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000
FT PER M IN.
C

FIG. 4—Simpler and more limited rule than that in fig. 3 is designed for a specific electrotinning installation.

per min. The rate of production is now seen to be, by equation (5),

$$n = \frac{343 \times 30}{43.556} = 236 \text{ base boxes per hr.}$$

The rate at which tin is deposited is, by equation (7), h = 236 × 0.65 = 153.2 lb per hr. The rate of current flow in the bath, by equation (8), is

$$I = \frac{1000 \times 153.2}{4.8814 \times 0.98} = 32{,}000 \text{ amps.}$$

Example B: Assuming an alkaline plant of type *Y* in which the contact path is 240 ft long and where D = 35; p = 0.65 lb; b = 30 in; and e is found to be 80 pct. The strip is to be coated on both sides.

Since the electrolyte is alkaline, E = 2.4407; hence by equation (1),

$$w = \frac{35 \times 2.4407 \times 0.80}{1000}$$

= 0.0684 lb per sq ft per hr. Equation (3) shows that

$$T = \frac{8.25 \times 0.65}{0.0684} = 78.5 \text{ sec.}$$

Proceeding by equation (2),

$$v = \frac{60 \times 240}{78.5} = 183.5$$

ft per min, and by equation (5),

$$n = \frac{183.5 \times 30}{43.556} = 126.2$$

base boxes per hr. By equation (7), h = 126.2 × 0.65 = 82 lb per hr, and by equation (8),

$$I = \frac{1000 \times 82}{2.4407 \times 0.80} = 42{,}000 \text{ amps.}$$

It will be observed that despite the difference in bath dimensions and in the flow of current in examples *A* and *B*, production on the acid line is much greater than on the alkaline plant.

Example C: It is premised that an acid line of type *X* is engaged in coating 30-in. strip on both sides to 0.65 lb per base box. Path length is 32 ft, and again, electrical efficiency is 98 pct and cathode current density is 200 amps.

By (1),

$$w = \frac{200 \times 4.8814 \times 0.98}{1000} = 0.959$$

lb per sq ft per hr. For the determination of immersion time, equation (4) applies to give

$$T = \frac{16.5 \times 0.65}{0.959} =$$

11.2 sec, and it follows by equation (2) that

$$v = \frac{60 \times 32}{11.2} = 171.5$$

ft per min. By equation (5),

$$n = \frac{171.5 \times 30}{43.556} = 118$$

base boxes per hr, and by equation (7), h = 118 × 0.65 = 76.7 lb of tin per hr. Rate of current flow, equation (8), is

$$I = \frac{1000 \times 76.7}{4.8814 \times 0.98} = 16{,}000 \text{ amps.}$$

By substitution in the formulas, a number of useful variants can be derived. The following are applicable to both types *X* and *Y* and to both acid and alkaline baths:

(11)

$$\text{a) } h = \frac{v\,p\,b}{43.556} \qquad \text{b) } p = \frac{I\,E\,e}{22.96\,v\,b} \qquad \text{c) } e = \frac{1000\,p\,n}{I\,E}$$

On type *Y* acid and alkaline machines plating both sides, the following apply:

(12)

$$\text{a) } v = \frac{7.260\,L\,w}{p} \qquad \text{b) } n = \frac{L\,w\,b}{6\,p} \qquad \text{c) } D = \frac{137.5\,p\,v}{E\,e\,L}$$

The next three formulas apply to type *X* installations coating one or both sides, to type *Y* plants coating one side only, and to either acid or alkaline methods:

(13)

$$\text{a) } v = \frac{3.63\,L\,w}{p} \qquad \text{b) } n = \frac{L\,w\,b}{12\,p} \qquad \text{c) } D = \frac{275\,p\,v}{E\,e\,L}$$

Speedy and simple methods of calculating the values of the various factors are a necessity to the busy tinning line operator and dependable devices, graphs and special purpose slide rules, can be designed to eliminate continual calculations.

Two formulas will cover all the situations.

For type *Y* lines, acid and alkaline, coating both sides, the formula may be written

$$\frac{D\,E\,e\,L\,v\,b^2}{p\,n^2} = 261{,}336 \tag{14}$$

Or, for all type *X* lines and for type *Y* lines coating one side, the formula is

$$\frac{D\,E\,e\,L\,v\,b^2}{(2\,p)\,n^2} = 261{,}336 \tag{15}$$

Fig. 3 shows a specimen slide rule designed for a type *Y* tinning line using an acid electro-

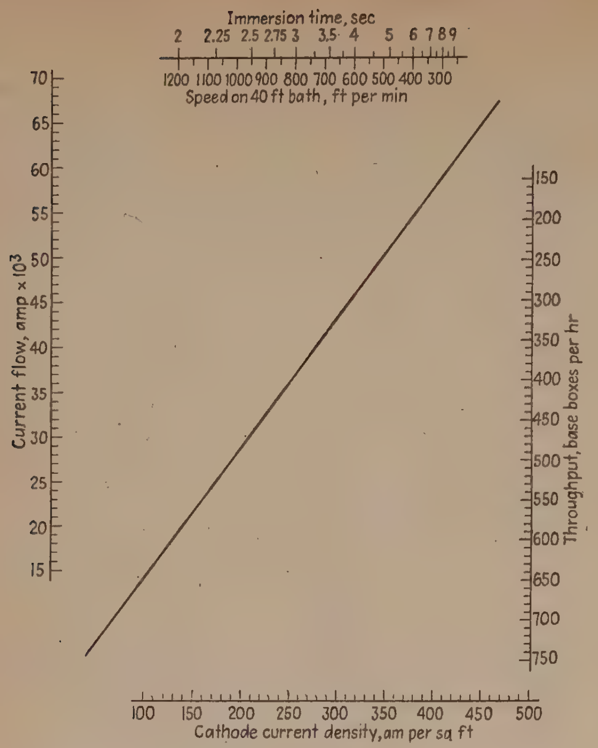

FIG. 5—This nomograph can be used for the same purpose as the special slide rules, eliminating continual, time-consuming calculations.

lyte and coating both sides. Similar rules can be designed for other type lines and for ranges of factor values differing from those shown.

This specimen rule was based on equation (14), but a rearrangement of the equation has resulted in the necessity for squaring the values of b and n and the extraction of roots being eliminated. By means of such a rule, on which seven variables are scaled, any two unknowns can be determined. Generally the values of L, b and p are known and the fluctuations in e are usually small. There remains D, v and n.

The rule is composed of four segments, A, B, C and D, of which A and D are stationary and B and C are slides. On A, a scale denotes output per hr, with a range of 150 to 750 base boxes. B carries three scales: (1) One on the upper edge representing the width of strip, with a range from 18 to 54 in.; (2) a short scale on the left-hand side of the lower edge for the electrical efficiency of the bath, with a range from 90 to 100 pct; and (3) a scale along the lower edge for the length of the immersion path, with a range from 20 to 60 ft. Segment C bears two scales: (1) One on the upper edge denoting speed of passage through the bath, 200 to 1000 ft per min, and (2) a scale on the lower edge representing the cathode current density, 100 to 500 amps per sq ft. A single scale for the coating weight of tin, 0.25 to 1.25 lb per base box, appears on D.

A line down the rule, on the right-hand side, facilitates alignment in the zero position before each new setting.

Manipulation of the rule is simple. Suppose 28-in. strip is to be coated on both sides with 0.75 lb of tin per base box in a plating tank with a 36-ft path length. Current density is 180 amps per sq ft with 100 pct efficiency. The unknown factors are (a) the speed at which the strip should progress through the bath and (b) the output per hr.

The procedure in this example is to

(1) Align all scales.

(2) Shift slide C until the density value 180 is opposite 0.75 on D.

(3) Under the immersion path length, 36, on B, read on C the required speed which is seen to be 306.5 ft per min.

(4) Align all scales.

(5) Move slide B until the indicator arrow on its lower edge points to the determined speed, 306.5, on C.

(6) Above the strip width, 28, on B, read the required throughput, 197 boxes per hr, on A.

When the bath efficiency is 100 pct, as in this example, the arrow on scale C points to 100 on B when the scales are aligned and a special setting of the small scale is unnecessary.

For a second example, the following conditions are postulated: Immersion path is 40 ft; strip width is 24 in.; coating weight is 0.50 lb per box, both sides coated; speed is to be 400 ft per min; and efficiency of the bath is 98 pct. Unknown factors to be evaluated are (a) cathode current density and (b) throughput per hr. These are determined as follows:

(1) Align all scales.

(2) Shift slide B until the arrow points to the speed, 400, on C.

(3) Above the width, 24 on B, read the throughput, 220 boxes, on A.

(4) Move slide B until the arrow on C points to 98 on B (the efficiency scale).

(5) Shift slide C until the speed, 400, coincides with the path length, 40, on B.

(6) Read the required current density, 143.6 amps, on C above 0.50 on D.

In the third example, assume 32-in. strip, an immersion path of 32 ft, 0.65 lb per base box of tin, coating on both sides, a target production of 350 boxes per hr and electrical efficiency of 97.5 pct. Values of (a) speed and (b) the current density are to be determined.

(1) Align all scales.

(2) Move slide B until 32 in. on its upper edge is aligned with 350 on A.

(3) Arrow on B now points to the required speed, 477 ft per min, on C.

(4) Shift slide B until the arrow on C points to 97.5 on the small efficiency scale.

(5) Move slide C until the speed, 477, coincides with the path length, 32, on the lower edge of B.

(6) Read the required current density, 280 amps, on C above 0.65 on D.

As a final example, to illustrate the manipulation in cases where the strip is to be coated on one side only, it is postulated that L = 36 ft; b = 36 in.; e = 0.95; and D = 280 amps. Weight of the tin coating is to be 0.40 lb per box. Unknown factors are (a) speed of progression and (b) throughput per hr, for which the appropriate formula is equation (15).

(1) Align all scales.

(2) Move slide B until 0.95 on the efficiency scale is aligned with the arrow on C.

(3) Shift slide C until the density, 280, is opposite 0.80 (0.40 × 2) on D.

(4) Read the required speed, 425 ft, on C beneath the path length, 36, on B.

(5) Align all scales.

(6) Move slide B until the indicator arrow points to the speed, 425 on C.

(7) Above the strip width, 26, on B, read the required throughput, 253 boxes, on A.

Fig. 4 shows a simpler slide rule of more limited scope, applicable only to type *Y* acid lines. With this rule the operator can, by reading the ammeters, check the current flow and the throughput of the line. The time the strip is in contact with the electrolyte also can be derived quickly. On this rule an adjacent scale has been added to the time scale showing the corresponding speeds for a bath length of 32 ft. Since immersion times vary in length, the speeds also will fluctuate accordingly when the time is fixed, as demonstrated in equation (2). Speed scales, similar to this one for a 32-ft bath, are readily calculated and graduated on rules of this type.

The rule in fig. 4 was based on the formula

$$(16)\quad \text{colog}\ T - \log n + \log I - \log D = \log 8.265$$

The rule has two stationary segments, A and C, and one sliding piece, B. A scale for the cathode current density is drawn on the lower edge of A. The scale on the upper edge of B shows current flow in amps × 10^3. Throughput per hr in base boxes is on the lower edge of B. The time that the strip is immersed in the bath is on the upper edge of C and below this scale is another showing speed for the specific bath length of 32 ft.

Manipulation of the rule is simple. Assume a tinning line is operating on a current density of 200 amps per sq ft, at a speed of 300 ft per min, with a throughput of 193 base boxes per hr and to give a coating of 0.76 lb per base box. To use the rule in fig. 4, immersion path length is taken as 32 ft. It is seen from the speed scale on C that the time corresponding to 300 ft per min is 6.4 sec. Slide B is, therefore, shifted until the throughput value of 193 is aligned with 6.4 sec on C, and it is then seen that opposite 200 amps on A is found 30,000 amps on B. This, then, is the current density that should be expected on the bath ammeter if efficiency is 100 pct. If the ammeter registers higher than 30,000 amps, the bath efficiency is lower than 100 pct and the actual efficiency can be calculated from the ratio of the observed value to the theoretical value.

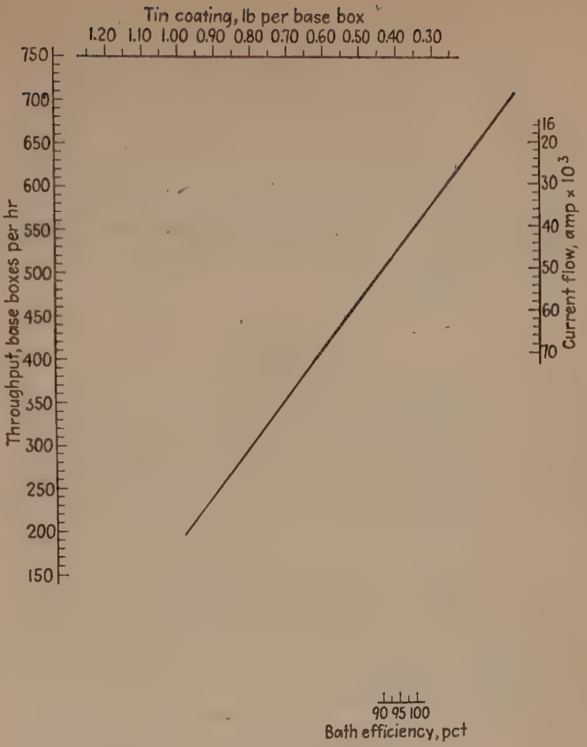

FIG. 6—Nomograph for determination of tin deposition requirements in lb per base box.

The throughput can be derived from the instrument readings. Suppose the current density reading is 250 amps per sq ft; the flow of current is 37,000 amps; and the speedometer of strip speed shows 591 ft per min, which is 3.25 sec immersion time as shown on the adjacent scales of segment C. Slide B is moved until 37,000 on its upper edge is aligned with 250 on A and it is seen that, opposite 3.25 on C, the required throughput value of 376 boxes an hour is indicated on the lower scale of B.

Alignment Charts

In the absence of a special slide rule, the alignment chart or nomograph shown in fig. 5 can be used for the same purpose. This chart has the same factor ranges as the rule in fig. 4. To use the chart, a straightedge is laid aligning two of the known factors, such as I and n, or D and T, to determine a point of intersection on the blank diagonal line. The straightedge is then laid so that it connects the remaining known factor with the opposite scale, passing through the determined point of intersection. For this chart, an immersion path of 40 ft was assumed.

Suppose a line is operating at 678 ft per min, with a current density of 220 amps per sq ft, and that the throughput is 350 base boxes an hr. A check on the current flow is required. By the adjacent scales at the top of the chart, it is seen that 678 ft per min is equivalent to an immersion time of 3.54 sec when the path is 40 ft. Laying the straightedge from 3.54 on the time scale to 220 on the current density scale, the point of intersection on the diagonal is marked. The straightedge is then laid from 350 on the throughput scale, through the point of intersection to the current flow scale, and it is seen that it intersects the latter at 33,000 amps, the figure which equates with the three remaining factors.

Transposing equation (11c) to read ,

$$p = \frac{I E e}{1000 n}$$

it is seen that the values of p are readily derived from the results typified in the preceding examples. A nomograph based on this formula is shown in fig. 6, by means of which close approximate results may be obtained. For instance, taking the conditions in the example of the preceding paragraph, the straightedge is laid on the chart connecting the values 33,000 on the current flow scale with 350 on the throughput scale and the point of intersection on the blank diagonal line is marked. Assuming a bath efficiency of 97.5 pct, the straightedge is laid from 97.5 on the efficiency scale through the marked intersection to the coating scale, and indicates the required value of p, which in this case is 0.449 lb per base box.

High Speed Lines

An impressive feature of the type *Y* lines most recently built is their high potential capacity. It is claimed that speeds up to 1000 ft per min are attainable. It is also affirmed that satisfactory coatings as low as 0.25 lb per base box are being applied. In recent installations, an immersion path of about 40 ft is favored and provision for cathode current densities up to 500 amps per sq ft is generally made.

Using the equations, it is interesting to derive the results obtainable when an acid line of this type is operated at maximum capacity. Let it be supposed that L = 40, b = 28, v = 1000, e = 97.5 pct and p = 0.25 lb on both sides. By equation (5) the hourly throughput is 642.5 base boxes, and by equation (2) the time the strip is exposed to electrolytic action is 2.4 sec. The value of the current density must equate with the time, the weight of tin to be deposited and the bath efficiency. Equations (1) and (3) must be applied in that order, or combining the two to obtain

$$D = \frac{8265 p}{E e T} \tag{17}$$

and applying this formula, it is seen that the cathode current density is fixed at 180.5 amps per sq ft. The rate of deposition by equation (7) is 161 lb of tin per hr, and the current flow by equation (8) is 33,700 amps.

Assume, however, that the maximum current density is employed at the maximum speed so that L = 40, b = 28, D = 500 and v = 1000. The value of n is unaltered at 642.5 and T remains at 2.4 sec. By equation (17), p = 0.692 lb, and the current flow is 93,400 amps. This coating thickness can be increased only by lowering the speed. For example, if the coating weight is raised to 1 lb and current density remains at the 500 amp maximum, by equation (12c) the speed must be reduced to 693 ft per min. It follows that the throughput will fall to 446 base boxes.

Composite Plated Coatings Measured Magnetically

TOTAL thickness of copper-nickel composite coatings electrodeposited on steel ranging from 0.0005 to 0.003 in., can be rapidly determined within about 10 pct, and thickness of each component layer to within about 15 pct with a magnetic method which does not require destruction of the plated article to provide a cross section for microscopic examination. This method, developed by Abner Brenner and Eugenia Kellogg of the National Bureau of Standards, utilizes the principle of the Magne-gage, an instrument designed to measure the thickness of single electrodeposited coatings on the basis of the attraction between a small permanent magnet and the plated sample.

As designed for measuring single coatings, the Magne-gage is essentially a spring balance, on the arm of which a magnet is suspended in contact with the coated surface. A helical spring is so attached that when wound by means of a knob, it exerts a force tending to detach the magnet from the surface. If, as is ordinarily the case, the coating is less magnetic than the object plated, the required force, as indicated on a dial adjacent to the knob, will be greater for thinner coatings.

For measuring composite coatings, the new modification involves the measurement of attractive force between the plated specimen and two permanent magnets of different strengths. The values obtained are used, in conjunction with a set of previously determined calibration curves for each magnet, to obtain the total thickness of the coating and relative thickness of copper and nickel layers.

Significance Of Proportional Limit and Yield Strength

Pointing to the mechanical limitations in accurately determining proportional limit values of many metals, the author advocates the use of yield strength as a more specific physical property criteria. A word of caution is also interjected concerning strict identification of yield strength value with the testing method employed.

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At first thought the proportional limit determined during a tensile test appears to be an excellent value to be used in design and from time to time such use has been advocated in the literature.[1]

The proportional limit is defined by ASTM[2] as "the greatest stress which a material is capable of developing without a deviation from the law of proportionality of stress to strain (Hooke's Law)." The proportional limit would thus appear to be a definite value for any material and ideally suited to design calculations; however, the mechanics of determining this limit are such that the figure obtained in practice is frequently a very uncertain value.

Many experiments have shown that for ordinary structural materials no definite limit of proportionality exists.[3] All known structural metals have stress-strain diagrams which deviate gradually from a straight line and the values of the proportional limit determined from them will depend on the minimum departure from the straight line that can be detected by conventional testing methods. The exact determination of the point at which a curve of gradual curvature departs from a straight line is practically impossible.

In a discussion of the subject, Templin has shown how widely the proportional limit determined from stress-strain diagrams varies with the sensitivity and accuracy of the testing equipment, the eccentricity of loading, the scale on which the stress-strain diagram is plotted, and other factors. Cook[1] states that the inaccuracies associated with the earlier methods of determination of this value have been overcome by the use of recording extensometers; however, the point of departure from a straight line is no more readily determined on a diagram plotted by autographical methods than on one obtained by direct reading and subsequent plotting. It is questionable whether autographically recorded stress-strain diagrams are as accurate as those plotted from the data obtained by trained observers using sensitive optical extensometers. It is not the intent of the author to discuss the merits of various methods of strain measurement in this article.

As an example of the uncertainty associated with the problem of determining proportional limits, pertinent data obtained during the determination of a stress-strain diagram for a stainless steel using a calibrated testing machine and an optical extensometer are given in table I. Examination of this table will show that the stress-strain ratio approximates a straight line below the proportional limit and the deviation from this straight line is very gradual. There is no sharp break at the proportional limit and this is typical of such diagrams. In table II are given values for the proportional limit estimated from diagrams drawn to the scales indicated and it is apparent that the value obtained is a function of scale on which the data are plotted. Another observer plotting these data on the same scales might decide that the deviation occurred at other points and obtain values differing from those given in the table.

A method of determining the proportional limit, mathematically, from data such as those

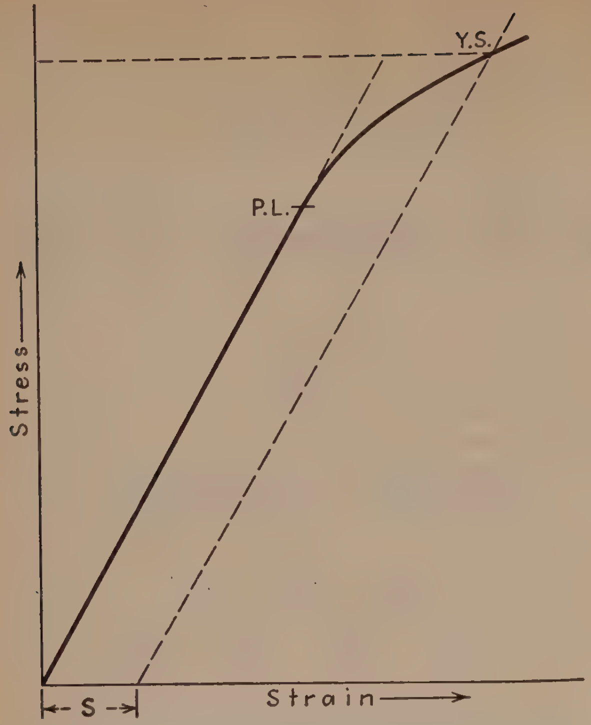


FIG. 1—Stress-strain diagram showing proportional limit (P.L.) and yield strength (Y.S.) at specified offset (S).

given in table I, has been described by Tuckerman.[5] He determined the point of deviation from the essentially straight portion of the diagram by plotting the deviation of the experimentally-determined values from the theoretical values of strain obtained by dividing the stress by the modulus of elasticity. This method is more accurate than that described previously. Using the Tuckerman method, the proportional limit based on the data in table I is 13,000 psi, which agrees with one of the values given in table II but differs markedly from two of the other values. The variation which may be obtained from the same set of data merely by different methods of plotting is indicated by this example. Because the values published in the literature usually give no indication of the method by which the proportional limit was obtained, there is considerable uncertainty in their use.

TABLE I

Stress-Strain Relationship

Stress, Psi	Strain, in. per in.
8,000	0.000285
9,000	0.000320
10,000	0.000355
11,000	0.000390
12,000	0.0004275
13.000	0.000460
14,000	0.000500
15,000	0.000545
16,000	0.000580
17,000	0.000615
18,000	0.000660
19,000	0.0006975
20,000	0.0007425
21,000	0.0007775
22,000	0.000820
23,000	0.000865
24,000	0.0009125
25,000	0.000955
26,000	0.0010025
27,000	0.001055
28,000	0.001100
29,000	0.0011625
30,000	0.0012225

The indefiniteness of the proportional limit has been recognized for quite a few years and values for this property are reported with less frequency than they once were. In general, unless details of the method of determination are specified, values given in the literature may be considered to represent a limit above which the material showed definite indications of departure from Hooke's Law, and can be used no more confidently than some of the other properties on which design calculations are based. Because of this uncertainty, yield strengths are being reported with increasing frequency. Among the papers published by three technical societies during 1947, 22 contained tables of the tensile properties of various metals. All of these tables contained values for yield strength. In addition, one reported a yield strength at 0.01 pct offset as the proportional limit and five others reported values for proportional limit with no comments. This is an indication of the trend toward the replacement of proportional limit values by yield strengths.

ASTM[2] defines yield strength as "the stress at which a material exhibits a specified limiting permanent set." The yield strength is not an inherent property of a material and it is necessary that it be specified in an arbitrary manner. There are three common methods by which this has been done; the "offset method," the "set method," and the "extension-under-load method."

In the offset method, the yield strength is the stress at which the strain exceeds by a specified amount that strain which would result if the stress-strain ratio remained constant. The yield strength is determined by this method from a stress-strain diagram as shown in fig. 1. At the specified offset, a line is drawn parallel to the approximately straight initial portion of the diagram. The stress corresponding to the point at which this line intersects the stress-strain curve is the yield strength for the specified offset. This point of intersection may be determined with considerable accuracy and different observers have little difficulty in checking each other.

In the set method, the yield strength is the stress at which a material exhibits a specified permanent set (strain) upon release of the load. A sensitive extensometer is used in determining yield strengths by this method and loads are applied to the sample and released in definite steps until the specified permanent set remains after release of the load. The stress corresponding to this set is the yield strength.

In the third method, extension-under-load, the yield strength is the stress at which a specified strain is reached. This method is only an approximation and is used for acceptance tests of materials whose stress-strain curves are well-

TABLE II

Proportional Limit From Stress-Strain Diagram

Scale used for Strain	Proportional Limit, Psi
0.001 in. = 1 in.	23,000
0.0002 in. = 1 in.	17,000
0.0001 in. = 1 in.	14,000
0.0005 in. = 1 in.	13,000

known. It is not suitable for design calculations.

Yield strengths are arbitrary figures and are useful only if the specified limit of strain is indicated as, for example:

50,000 psi (0.2 pct offset)

50,00 psi (0.2 pct permanent set)

If they are so specified, the designer has a definite indication of the limits imposed. It has been shown by a number of investigators, however, that the stress resulting in 0.2 pct permanent set is considerably higher for some materials than that resulting in 0.2 pct offset and such differences must be considered in using yield strengths in design. This is true particularly for low values of strain. If consideratin is given to these limitations, yield strengths may be used with a confidence not associated with proportional limit values.

References

[1] H. B. Cook, "The Extrusion Molding Process," The Iron Age, Feb. 5, 1948, p. 79.

[2] ASTM Standards 1946, part 1A, p. 741.

[3] "Mechanical Properties of Metals and Alloys," National Bureau of Standards, Washington, 1943.

[4] R. L. Templin, Proc. ASTM, vol. 29, part 2, 1929, p. 523.

[5] L. B. Tuckerman, discussion following the Templin paper.

48,000 Welds an Hour

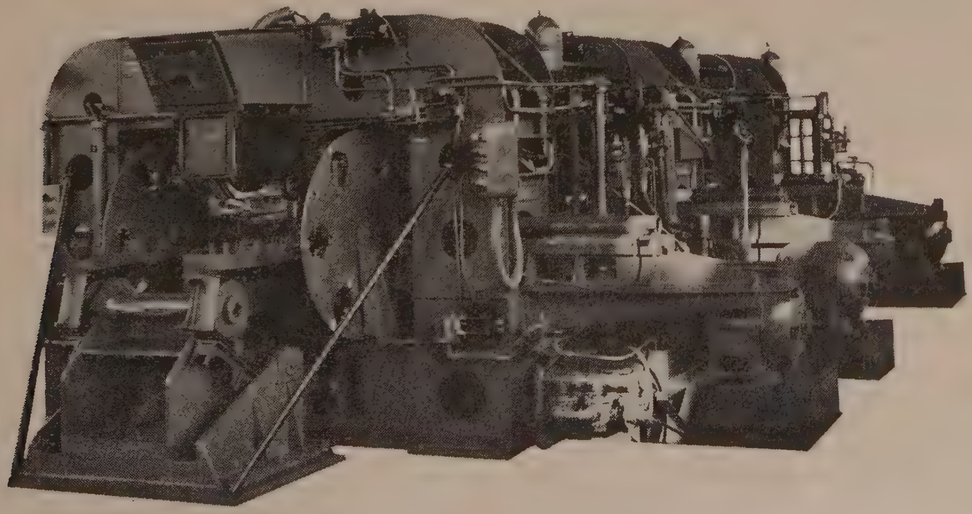
A THREE-STATION, multi-point spot welder that makes 48,000 welds per hr has been developed by the Federal Machine and Welder Co., Warren, Ohio. This machine automatically inserts, positions and welds to an elliptically-shaped muffler body, a baffle assembly consisting of six different components. Production totals 500 muffler bodies an hr, utilizing 3000 baffle assemblies.

No two of the six baffles are alike. Each contains holes, tubes, or both, and must mate with one or more of the other baffles. This necessitates precisely locating the baffles for accurate alignment.

A continuous conveyer carries the muffler shells through the three welding stations. Four other conveyer arrangements contain suitable locating nests for carrying the various baffle units. Each station has two hydraulically-actuated sliding horns that move the baffles into the shell and welding position. These horns also carry the short circuiting mandrels for the series welding. Each station has its own hydraulic system, welding transformers, and the necessary mechanical and electrical controls for efficient operation and safety.

The 96 individually hydraulically-operated, water-cooled welding guns are spaced so that the 16 spot welds per baffle are made on ⅞ in. centers. During welding, the elliptical muffler shell is held flat, with the welds being made on the under-side as well as on the upper periphery.

Originally setup to produce all the mufflers for two makes of automobiles, this machine, with slight modifications, is expected shortly to be in production on mufflers for all makes and models of cars in the plant of one of the country's leading automobile manufacturers.



DESIGNED to fabricate automobile mufflers, this three station spot welder welds 3000 sub assemblies into 500 muffler bodies an hr, producing 48,000 welds.

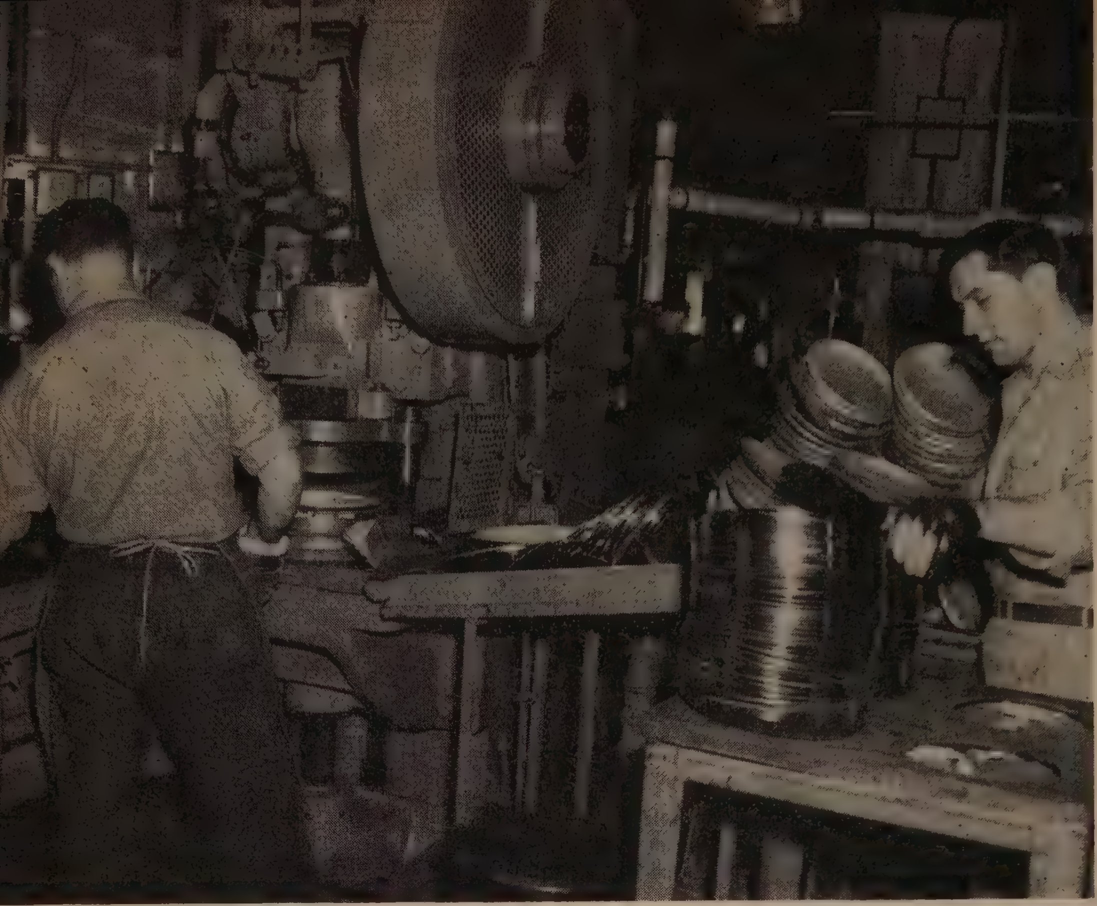


FIG. 1—Plated front and back plates for hub caps are paired by operator at the right. The parts slide down chute to the press where a die crimps the cover over the back plate. Pressman then feeds caps to the roller conveyer at the left which carries parts through enameling stations.

Assembling and Enameling

Economical high-speed operations are essential in assembling and finishing automobile accessories. This article describes the techniques used at the Brown-Lipe-Chapin Div., General Motors Corp., plant in assembling and enameling hub caps. Plated front and back plates are pressed into the formed part and a conveyer system then carries the hubs through enameling lines, each handling an average of 1700 parts per hr, and drying ovens.

○ ○ ○

ASSEMBLY and finishing of stamped automobile hub caps require high-speed operations to maintain production schedules and to meet the severe competition in the field. Considerable portions of the Brown-Lipe-Chapin Div., General Motors Corp., plant in Syracuse are engaged in such work and have developed highly efficient mass production techniques.

Each General Motors car and light truck has its own design hub cap, but all are of circular shape and each is made from a zinc-plated drawn steel back plate to which is attached a thin brass front that has been given a heavy nickel and chrome plating before the two elements are assembled.

All fronts are stamped to form a name or emblem and the recesses must be decorated with enamel in one or more colors applied by spraying through masks. The masking must fit closely and also must be kept free of enamel, especially on faces that are in contact with the work, to avoid rejections.

Back and front sections of the hub caps are carefully inspected after plating and are taken to the assembly station, fig. 1, in tote boxes. There, the parts are stacked on benches to be paired, a back plate being set inside a front, and the two components passed down a chute to an assembly press. Each pair is then placed in the press die which, when closed, crimps or curls the edge of the outer piece around the lip of the back plate to form a permanent assembly.

This operation is performed as rapidly as the parts can be placed in the die and removed. As

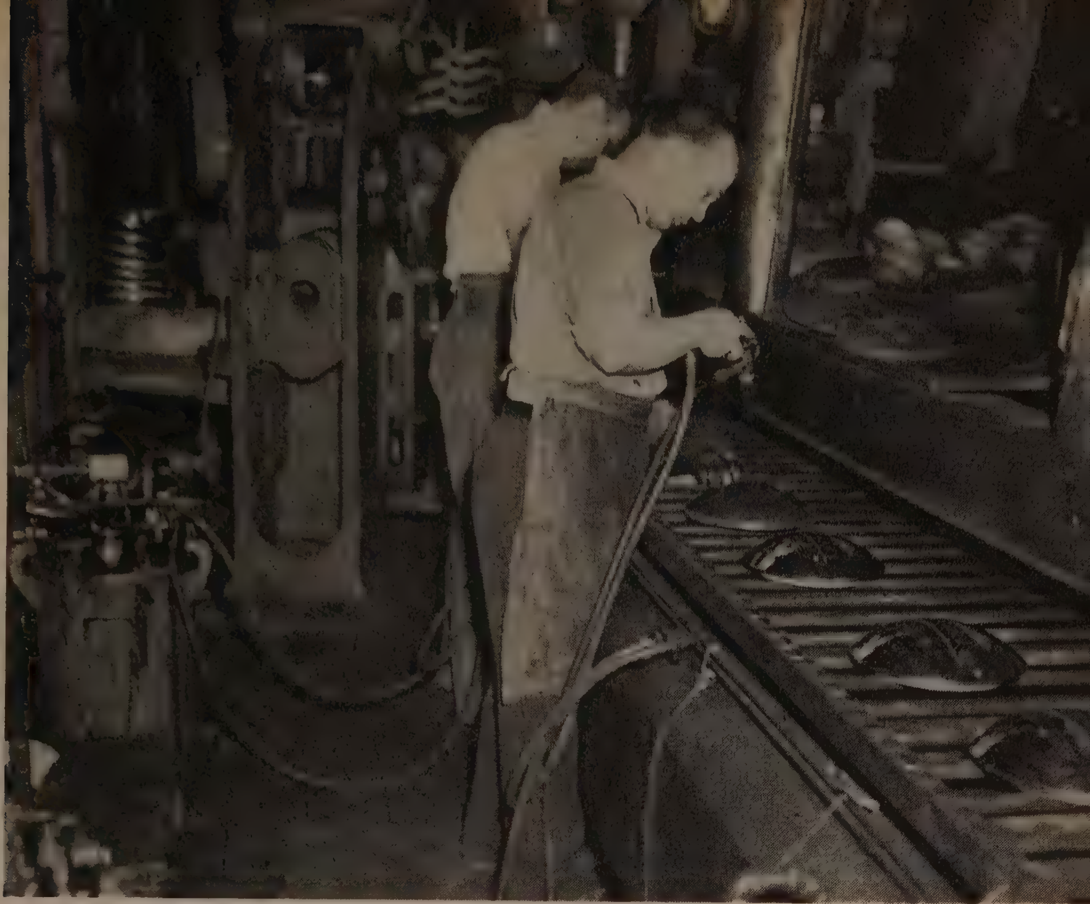


FIG. 2—Roller conveyer advances the hub caps to spraying stations where the recessed areas are enameled through masks.

Auto Hub Caps

By HERBERT CHASE

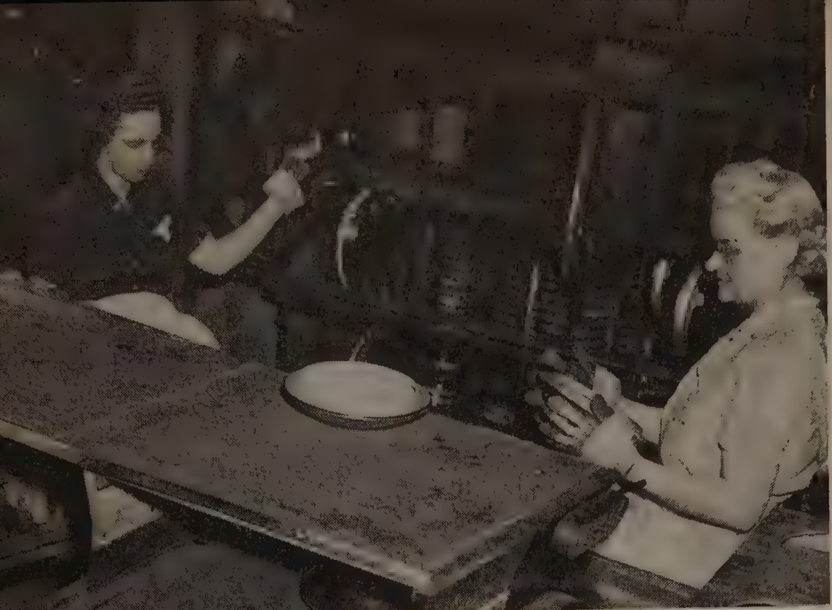
taken from the die, the caps are placed face up on a roller conveyor leading to the enameling department in which there are two parallel spray lines, each fed by an assembly press. Rollers on the conveyer are kept in rotation and advance the work rapidly without stops through the enameling stations, two of which are shown in fig. 2. The caps will continue in motion on this conveyer until the enamel is dried and the caps are placed in cartons for shipment.

At the spraying stations, there is one sprayman for each color to be applied. Most of the emblems require two colors, but some require three. Spray booths are unnecessary, as air is drawn downward through the conveyer, carrying with it any fumes or overspray created. The guns used are small since only small areas are covered.

The method for handling masks is important, as any carelessness will result in rejections. In front of the spray stations is a table, fig. 2, where clean masks are placed and on which those that require cleaning are laid. Spraymen take a clean mask and place it in succession over each cap moving in front of them. When in place, spraying is done quickly and, by the time one cap is finished, the next is entering the station on the conveyer.

Masks can be used from 8 to 14 times before requiring cleaning. When cleaning is necessary, the mask is laid on the table and a clean one is substituted. The soiled mask is removed by an operator on the opposite side of the bench who hangs it on a bar conveyer to be carried through a special degreaser using Detrex, a solvent for the enamel used. In the degreaser, the mask is first sprayed with the warm solvent for removal of most of the still-wet enamel. Then, as the masks continue through the solvent vapor, condensation liquor washes off any surplus of enamel that may remain. In 40 to 50 sec, the clean mask returns to the loading point, is taken off the conveyer and placed on the table for reuse.

This arrangement requires three or more masks for each spray station, but is rapid and effective and enables the spraymen to work rapidly without stopping to clean masks. The operator handling the degreaser can serve as many as seven enamelers. The degreaser solvent is constantly circulated, filtered and redistilled in



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LEFT

FIG. 3—Enameled hub caps arriving at inspection station on belt conveyers. Perfect caps are hung on the bar conveyer, in the right background, to be carried through drying ovens.

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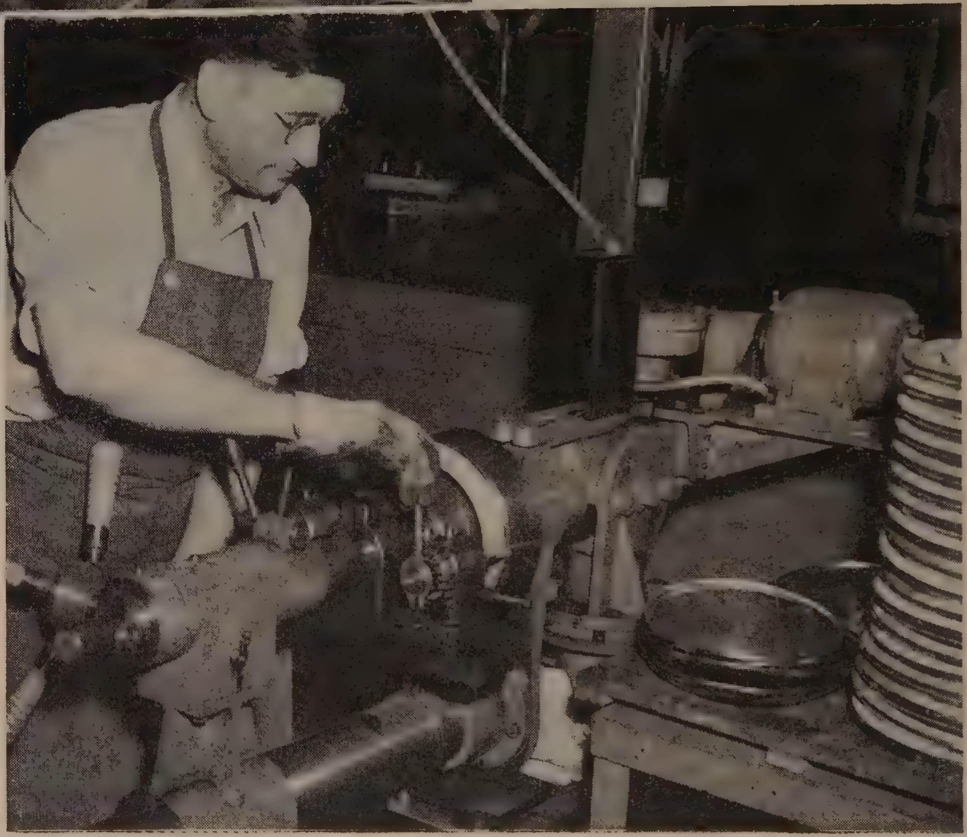

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RIGHT

FIG. 4 — Machine for salvaging imperfectly plated hub caps separates the two components by spinning the flange of the cover plate free from the steel back plate.

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a continuous automatic setup to keep it free from enamel residue.

One of the spray conveyers is fully occupied with Chevrolet caps which are sprayed in red and blue. The other conveyer handles all other jobs, including some for customers other than General Motors. Each spray conveyer delivers an average of about 1700 caps per hr to a belt conveyer that carries them to the inspection station, fig. 3, where each cap is examined for defects, especially in spraying, and is set aside if defects are found.

From the inspection station, a bar conveyer carries them through an indirectly gas-fired oven in which the synthetic enamel is baked for 22 min at 300°F. At the exit of the oven, caps are removed and are packed in cartons with cardboard spacers, 36 to 47 per carton, or in individual cartons if the caps are for dealer replacement stocks.

Rejects go to repair benches where defects in painting are repaired. If plating defects are discovered, it is necessary to separate the front plate from the back. This is accomplished in a machine, fig. 4, in which the assembled cap is positioned on a dished fiber chuck against which the cap is pressed to be driven by friction as the chuck is rotated slowly. A tool, carried by an eccentrically mounted holder, is engaged under the flange of the brass front plate. Then, as the chuck turns, the tool is advanced radially outward to spin the edge free. Both parts are sent back to the plating department for stripping and replating, and only rarely does either plate have to be scrapped.

New Production Ideas . . .

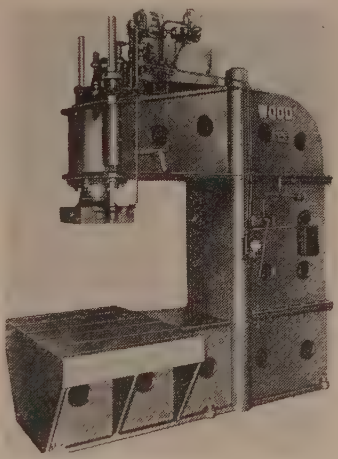
Machines for roll grinding, open gap presses for flanging, bending and straightening, a vibration table, a machine for camshaft gaging, a punch, shear and coper in one unit, and a babbitting furnace are featured this week, together with a radiation pyrometer, a tracer for measuring surface roughness, a metal chip carrier, and a coal-fired space heater.

Roll Grinder

TWO features on the new Filmatic 20, 24, and 28-in. heavy duty, traveling table, roll grinding machines, said to be of particular interest to roll shop men, are the electronic table reverse, which provides an infinite number of traverse rates with improved accuracy of reversal, and the automatic wheel balancing that automatically aligns the wheel perfectly in a few seconds. The machines are available in five between-center lengths: 8, 10, 12, 14 and 16 ft, with longer machines built to requirements. The grinding wheel spindle runs on special bearings and can be equipped with automatic balancing. Table is traversed mechanically. Electronic controls provide an infinite range of traverse rates from 3 to 120 ipm. Camber or crown on rolls is obtained through a tilting wheelhead cambering unit. The wheel truing unit is hydraulically powered and arranged for cam controlled profile truing. The unit is also equipped with power cross feed. *Cincinnati Grinders, Inc. For more information, check No. 1 on the attached postcard.*

Open Gap Press

FURNISHED in various sizes and capacities, the HydroLectric press is a self-contained open-gap type used for flanging, bending or straightening. On the 250-ton model, sizes of the table and ram head are 30x30 in. and 8x6 in. respectively. Operating hydraulic pressure is supplied by a 2000 psi, 2-stage rotary-vane type pump displacing 17.7 gpm. The pump, with a directly connected 1200 rpm motor, is mounted on an oil reservoir on top of the press. This press, furnished complete with protective devices, safety valves, pressure gages and other control equipment, is controlled by a single four-way operating valve connected by linkage to twin control levers mounted on opposite sides of the press. *R. D. Wood Co. For more information, check No. 2 on the attached postcard.*

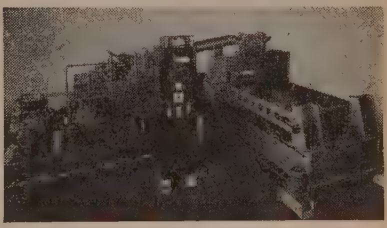


Grinders

PRINCIPAL changes in the redesigned 1 and 2-hp precision internal and external grinders for toolroom and production work is in the motor mounting. An adapter base for the motor is now supplied with a flat key and keyway between the adapter and the main frame casting. The motor is mounted on the adapter with four screws while two screws clamp the adapter to the main frame. This reduces time required in adjusting the V belts when clamping from an external to an internal spindle head. Other improvements permit cylindrical, internal and surface grinding operations when these machines are mounted in lathes, boring mills, planers or milling machines. *Hisey-Wolf Machine Co. For more information, check No. 3 on the attached postcard.*

Vibration Table

A NEW vibration table that can be vibrated under controlled conditions of frequency, acceleration, amplitude, and direction, shakes loads up to 1000 lb at 600 to 3600 cycles per min with a horizontal motion having total amplitudes up to 0.124 in. Vibration is produced by a mechanical oscillator that is rigidly attached to the table and consists of two adjustable eccentric disks rotating on vertical eccentric shafts in opposite directions. The oscillator is driven by a variable speed motor through a gear box and vertical shafts with flexible rubber couplings between vibrating and non-vibrating members. Eccentrics are adjusted by means of a two-part worm gear and graduated scale on the vertical shaft, and are clamped in position by pulling the two parts of the worm gear together. The table has a clear horizontal surface 4x6 ft



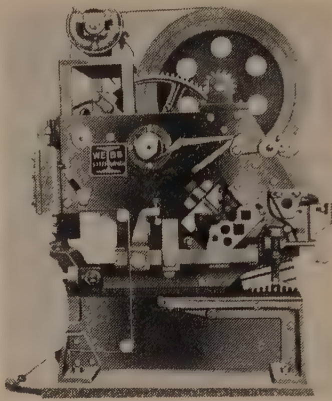
on which equipment to be tested may have a center of gravity as high as 24 in. above the table. *Baldwin Locomotive Works. For more information, check No. 4 on the attached postcard.*

Camshaft Gaging

A MACHINE that permits a complete and almost simultaneous gaging of critical dimensions of an automobile camshaft has been developed. Six bearing diameters and two lengths of the camshaft are checked with Airsnaps used in conjunction with a five-column and three-column Precisionaire base instrument. The shaft is revolved manually to check for out-of-round and for the concentricity of five bearings. These are indicated by a variation in the float position in an additional three-column Precisionaire. Checking of two lengths is accomplished by additional air jets incorporated in Airsnaps. Runout of the oil pump drive gear is checked by a separate gaging unit consisting of a mating gear mounted on a ball slide and actuating a dial indicator. The relief hole is checked for clear passage by air pressure. A Sclerescope is mounted in the front of the front gaging station to determine hardness while the camshaft is in gaging position. *Sheffield Corp. For more information, check No. 5 on the attached postcard.*

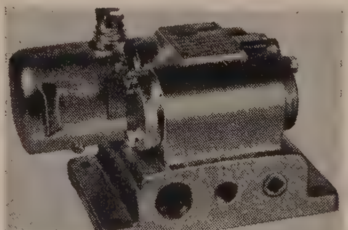
Punch-Shear-Coper

THE new Steelworker is designed for shops having a variety of work and combines five complete tools in a single unit. It will punch; cut angles, Ts and Zs, and miter angles; cut off square or round bars; shear flats and plates; and cope angles and beams. Depth of punch throat is 12 in.; length of stroke 1⅛ in.; and it operates at 30 strokes per min. The frame is made of steel plate, welded and bolted. The unit is made of Uni-Steel construction, rigidity and freedom from weaving or distortion insured by this construction. The machine is arranged for motor drive. *Webb Corp. For more information, check No. 6 on the attached postcard.*



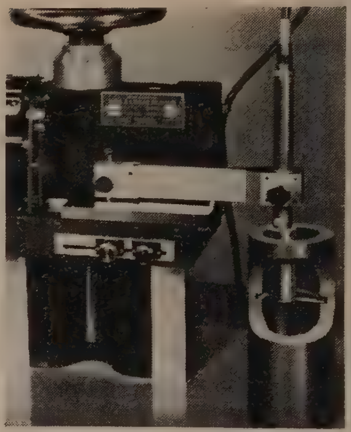
Air Valves

FEATURES in the line of solenoid operated Ring-Seal air valves include a single interchangeable replaceable valve assembly used in all valves up to ¾ in. and larger, 3-way or 4-way and 3, 4, or 5 port. Design makes possible operation up to 600 strokes per min. The valves are direct acting and positive in operation. The standardized valve assembly is of the double opposed type, completely balanced, reversible and removable from the valve housing at either end. The valve itself is of the opposed poppet type, the seat being at a 45° angle for fast opening and closing. Port openings are provided in the bottom as well as sides of the valve body. Valve assembly is stainless steel or bronze. Valves are designed for operation as standard with 110 v, 60 cycle, ac and with air pressure up to 105 psi or more. *Viking Products Co. For more information, check No. 7 on the attached postcard.*



Tracer

A NEW tracer for use with all profilometer amplimeters in taking surface roughness measurements provides for measuring hard-to-reach surfaces such as internal grooves and slots; tracing axially in small holes; tracing both transversely and longitudinally in narrow slots and grooves and on gear teeth; and tracing on internal and external tapered surfaces. The tracing point is located at the end of a narrow beam which projects horizontally from the bottom of the tracer, and no skids are used. The tracer is operated mechanically by a Pilotor. *Physicists Research Co For more information, check No 8 on the attached postcard.*

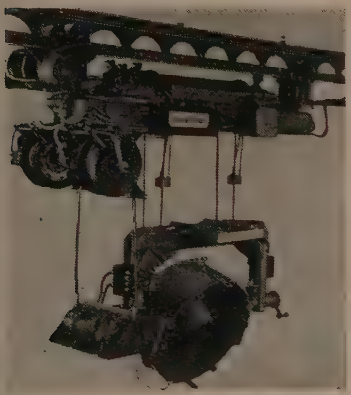


Temperature Controller

TWO instruments for indicat ing and recording temperatur control combine the conventiona pyrometer control features wit the auxiliary devices for maintain ing precision straight-line contro known as the Xactline-Capacitro and Xactline-Capacilog, the instru ments have the following advan tages: For automatic, precisio straight line temperature only on instrument is required and it i not necessary to mount or connec auxiliary devices on the contr panel; saw-tooth temperatur charts, indicative of overshootin and undershooting, are eliminated rejects caused by broad range heat ing are reduced; elimination o too-hot and too-cold scrap in injec tion molding machines. Precisio temperature control is said to b automatic regardless of the siz of the furnace, load, or length o heating cycle. They are designe for electrically heated or fuel-fired ovens or furnaces equipped with motor-operated or solenoid valve. *Claud S. Gordon Co. For more information, check No. 9 on the attached postcard.*

Chip Handling Carrier

FOR transporting baskets of metal chips from oil extractors to storage bunkers, a new automatic overhead carrier delivers, empties by turning the basket over, and returns without assistance from the operator. All operations are taken care of by one man at the extractor. The carrier handles baskets of approximately 15 cu ft capacity, up to 1000 lb loads. Baskets are clamped into position by a hand crank and turn over automatically at a speed of 12½ rpm. A dial selector, located above the crank, enables the pre-selection of any station to which it is desired to dispatch a load. Three motors serve the hoist, carrier travel and basket roll-over. The carrier has a travel speed of 200 fpm and will not travel unless basket grab is in high position. *Cleveland Tramrail Div., Cleveland Crane & Engineering Co. For more information, check No. 10 on the attached postcard.*



Machine Accessories

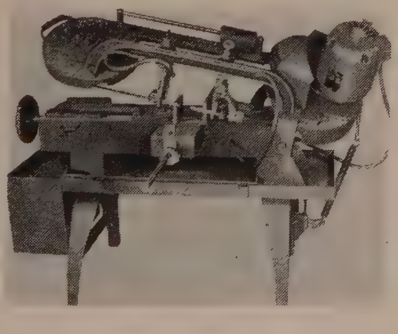
GEAR transmissions and flange spindles have been developed to accompany the DoAll Speedmaster variable speed control unit. Gear transmissions, recommended for machine tools and lens grinders, belt conveyers, auxiliary feeders and packaging equipment, range in capacity from 0.1 to 7 hp and have reduction ratios of 40:1, 17:1 and 4:1. Several are two-geared units with gear shifts for speed change. Speedmasters used in conjunction with the two-speed transmission will provide infinitely variable speeds as high as 30:1. Each transmission is a self-contained unit for mounting in varied positions. Design points include continuous heavy duty service, ball and roller bearings, hardened gears and oil bath operation. The flange-mounted spindles are equipped with anti-friction precision bearings designed for continuous operation and suitable for light or heavy duty. *DoAll Co. For more information, check No. 11 on the attached postcard.*

Abrasive Belts

DESIGNED with a resin bond for durability and heat resistance, Three-M-ite resin bond cloth belts consist of aluminum oxide mineral grains, in grits from 24 to 120, with widths up to 18 in. and lengths from 60 in. up. Production per belt in a plant manufacturing forged pliers is said to have been increased from 750 pieces to 3950 pieces and plumbing fixture production on brass castings increased from 75 to 400 pieces per belt. The belts have been developed to offer the extra durability and heat resistance of a resin bond in a non-waterproof abrasive. *Minnesota Mining & Mfg. Co. For more information, check No. 12 on the attached postcard.*

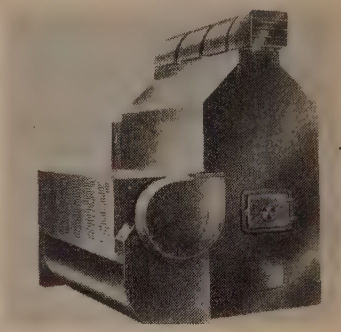
Wet Saw Cutting

THE Wells No. 5 utility model horizontal metal cutting band saw, with a self-contained flushing system, permits safe use of higher fpm cutting speeds and increases blade efficiency. The complete system includes a fluid tank with a centrifugal type pump-motor unit and a screened intake, as well as tubing and a flow control valve. *Wells Mfg. Corp. For more information, check No. 13 on the attached postcard.*



Coal-Fired Heater

DEVELOPMENT of a coal-fired warm air space heater that can be converted for firing with gas or oil has a stainless steel combustion chamber. It is said that use of this metal increases service life and eliminates a substantial amount of the customary side wall refractory. The new model is available in two output capacities, 1,250,000 and 1,500,000 Btu per hr. Fuel consumption for the first model is estimated at approximately 133 lb per hr, based on coal having a calorific value of 12,500 Btu per lb. Operation is based on the warm air recirculation principle. The heater can be used with or without ducts, and can be adapted to bring in and heat outside air for applications that require an arrangement for tempering makeup air. It also is usable for summer ventilating and is adaptable for process drying and curing. Blowers and induced draft fan are mounted on a single shaft. Power is provided by a single motor. *Dravo Corp. For more information, check No. 14 on the attached postcard.*



Radiation Pyrometer

TEMPERATURE control without physical contact in the range of 100° to 600°F is offered by the low range Radiamatic, designed for the measurement and control of processes within this temperature range and involving moving objects. Specific uses include control of plastic mills and processing of plastic-coated fabrics. In operation, radiation of heat from the object is focused by a lens upon a group of small thermocouples, creating a minute emf. The potentiometer receives this emf and amplifies it in the conventional manner to operate a recording pen and, if control is included, to actuate a control such as a mercury switch. Overall sensitivity of the pyrometer system lies between 1° and 2°F within the range of 100° and 212°F and sensitivity increases with higher temperatures. It can be used in applications where surfaces are rough, has a high coefficient of friction or is adhesive in quality, on any object whose emissivity is reasonably high and relatively constant. *Brown Instrument Co. For more information, check No.* 15 *on the attached postcard.*

Milling Head Attachment

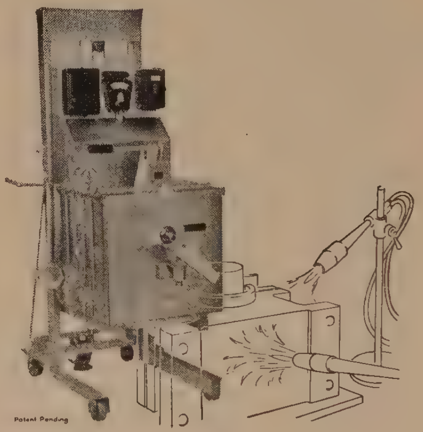
A TWO-SPEED device for portable milling heads that allows the doubling of the number of milling head speeds for greater range of milling and boring has been announced. Prolonged tool life with proper speeds, smoother finishes, use of larger cutters and controlled boring of larger holes are advantages listed. Flexible connection between motor and gear head allows for easy mounting and no cramping of motor shaft. Ratios are 1:1 and 6:1. This attachment doubles present spindle speeds and allows all original speeds with additional low speeds in proportion to present pulley. *Olson Industrial Products. For more information, check No.* 16 *on the attached postcard.*

Impact Nut Setter

AN improved high-speed electric impact nut setter in a universal model for 110 v, 60 cycle ac, or dc; and a high cycle model for 220 v, 180 cycle, three phase ac, has capacities from ⅜ to ¾-in. bolt size. It tightens or removes nuts, bolts, studs, and lag screws and can be used for drilling, tapping, etc. It is torqueless; will not twist in the operator's hands when the nut is tight. It drives nuts or bolts 1750 rpm at free speed. At point of resistance, the impact unit automatically delivers 3000 impact blows per min and tightens to a torque of over 200 ft-lb on a ¾-in. removing bolts and nuts. The tool bolt. It is instantly reversible for is 12½ in. long and weighs 14½ lb. *Speed-O-Matic Sales, Inc. For more information, check No.* 17 *on the attached postcard.*

Babbitting Furnace

IN the operation of a new one-man furnace developed to line bearings without the use of hand ladles, the bearing is placed on the work platform and the furnace rises to the position where the pouring trough will guide the flow of molten metal into the bearing at controlled speed without splashing, thus preventing blow-holes in the lining. A bottom-pour valve inside the furnace pot is opened and molten metal passes down the trough into the shell at a controlled flow. Known as the Babomatic, it is equipped with casters for portability, and designed for gas or electric heating. Pot capacity is about 200 lb. *United American Metals Corp. For more information, check No.* 18 *on the attached postcard.*



Gas Flow Meter

A GAS flow meter for use with metallizing guns has been designed for maximum efficiency with proper flame balance, higher spraying speeds and gas savings. Known as the Metco Type GF, the unit is said to remove the human elemen from flame balancing and suppl the right gas balance for each metal Restrictions in flow or change i pressure are indicated. Other advantages include reduction in cos of metal sprayed and more uniforn sprayed metal coatings. *Metallizing Engineering Co. For more information, check No.* 19 *on the attache postcard.*

Nonferrous Electrode

A NEW electrode, called Softweld, deposits dense, soft machinable welds in gray iron castings. Softweld is a nonferrous electrode and operates with a soft steady arc on either ac or dc. The operating characteristics of the new electrode are said to simplify welding cast iron for machining. The electrode is designed to cause the weld to flow over and bond t the cast iron with a minimum o penetration and heating of the base metal. The deposit is smooth, dense and well feathered into the base metal. The entire weld area may be drilled, machined, sawed or tapped with ease. Softweld is available in the 14-in. length in ⅛ and 5/32 in sizes. *Lincoln Electric Co. Fo more information, check No.* 20 *o the attached postcard.*

Box Hand Truck

TWO hand levers at the pushin end permit unlocking the bo at the front end for parts disposa on a new box type hand truck de signed for handling light parts

Of the four pneumatic-tire wheel two are stationary and the two the pushing end are pivot whee for maneuverability. Rectangula tubular handles are provided the top and bottom of the pushin end for operating convenience an facilitate lifting the truck to npty. Boxes are manufactured to stomers specifications. *Palmer- ile Co. For more information, eck No. 21 on the attached post- rd.*

sin Core Binder

UP to 50 pct faster baking cycles at lower oven temperatures e said to be achieved with a liquid nthetic resin core binder known Ibon, introduced for the produc- n of cores of maximum baked rength and hardness with sharper ges, better detail, and greater re- tance to shock and abrasion. Less ssing during baking, casting, or akeout with cores produced with is binder are other advantages. r most successful use, foundries ust carry 4 pct or better moisture core mixtures, use sand essential- free from clay, and not add ben- nite to the mix. This binder, Ibon, available in 55 gal drums contain- g 500 lb or in 8000 and 10,000- l tank cars. *Interlake Chemical rp. For more information, check . 22 on the attached postcard.*

nveyer Line Marker

A NEW marker that can be adapted to most existing con- yer lines, dates, codes, or marks r production control. The stand- d wheel is 5 in. diam with an erall width of 2 in., which pro- les a printing capacity of 1 in. dth. The unit is an aluminum sting and can be used either in rizontal or vertical position. The inting wheel has two rubber fric- n bands under adjustable spring nsion for proper driving friction. is furnished as a continuous rking roll, or with a spring re- rn so that it returns to a specific inting position after each impres- n. *Wm. A. Force & Co. For more formation, check No. 23 on the ached postcard.*

wder Extinguisher

A DRY chemical powder extinguisher designed for use ainst flammable liquid and elec- cal fires in industrial plants, oil ineries, pipelines and garages is de in 20 and 30-lb capacities. is extinguisher contains a special y powder mixture that is dis- arged through the nozzle at a tance of 20 ft. By removing a lock pin in the handle and pulling the trigger, the powder chamber is pressurized by CO_2 released from a cylinder mounted on the side. Pressure is maintained as long as the trigger is held open until all powder is expelled. If trigger is released before powder is expelled, pressure is maintained in both carbon dioxide and powder chambers for further operation. *Walter Kidde Co. For more information, check No. 24 on the attached postcard.*

Floor Stand

A NEW tripod type, welded all-steel shear stand provides a rigid, lightweight support for Beverly throatless and slitting shears, and is adaptable to other bench type tools and equipment. Tubular supporting and bracing members provide the necessary rigidity and strength. Legs have suitable holes for any desired method of anchoring the stand. The top mounting plate, measuring 7 x 11 in., is heavy gage steel. *Beverly Shear Mfg. Co. For morei normation, check No. 25 on the attached postcard.*

Protective Solution

A PROTECTING solution called Leatardent, is used in the plating shop to prevent water staining and tarnishing of nickel plated work, brass work and, to some extent, copper, prior to operations such as lacquering, packing, plating, and assembly. Leatardent is used either full strength or diluted up to three parts of water as a final dip on the work. It is used cold; the work can be rinsed in either cold or hot water. *Lea Mfg. Co. For more information, check No. 26 on the attached postcard.*

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NAME .... TITLE ....

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Hose and Couplings

CATALOG No. 49 gives latest information on a line of hose assemblies and couplings. Products and installations are illustrated with engineering information including methods for computing length of hose assembly. Complete specifications are listed. *Anchor Coupling Co. For more information, check No. 27 on the attached postcard.*

Springs

WHAT a good spring is and how to get it without excessive cost is explained in folder. Diagrams are shown with names commonly used to designate springs and spring ends given. *Illinois Coil Spring Co. For more information, check No. 28 on the attached postcard.*

Fan Heater

INSTALLATION of a high-pressure steam fan heater is diagrammed in Bulletin 109 with colors used to indicate high-pressure steam, vapor, high-pressure condensate, and vapor condensate. System is designed to eliminate equipment used in conventional systems. *Niagara Blower Co. For more information, check No. 29 on the attached postcard.*

Speed Nuts

BULLETIN explains Speed Nut principle and lists assembly advantages. Diagrams show pre-locked and double-locked position. Major types of 3000 shapes and sizes are illustrated. *Tinnerman Products Inc. For more information, check No. 30 on the attached postcard.*

Tool Steel Selector

NAME, bar color, typica
analysis and heat treatin
data are given. Selector cover
nondeforming, water hardenin
shock resistant, hot work an
high-speed tool steels. Sizes c
hollow die steels carried in stoc
are listed. *A. Milne & Co. Fo
more information, check No. 31 o
the attached postcard.*

Fasteners

BOOKLET discusses the use c
fasteners in the construc
tion of a $77 million dollar housin
project, the development of a lock
ing thread stud, technical data o
the strength of large bolts and th
production of wire for the fastene
industry. *American Institute o
Bolt, Nut & Rivet Mfrs. For mor
information, check No. 32 on th
attached postcard.*

Pneumatic Vibrators

CATALOG 104 discusses pne
matic vibrators which inco
porate end intake connection wi
built - in swivel action. Use
the units on hoppers and bins,
production molding machines a
other applications are describe
*Cleveland Vibrator Co. For mo
information, check No. 33 on t
attached postcard.*

Presses

DRUM type friction clutch a
power presses presented
catalog are illustrated with c
away views. Press types inclu
four-point, two-point, single poi
toggle, open back gap, straight si
trimming and knuckle joint. *Cle
land Punch & Shear Works Co. F
more information, check No. 34
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Tool Steels

CHART gives comparable t
steel grades under hi
speed, hot work, special al
tool, and carbon tool steel cla
fications. Brand names and ma
facturer are listed. *McInnes S
Co. For more information, ch
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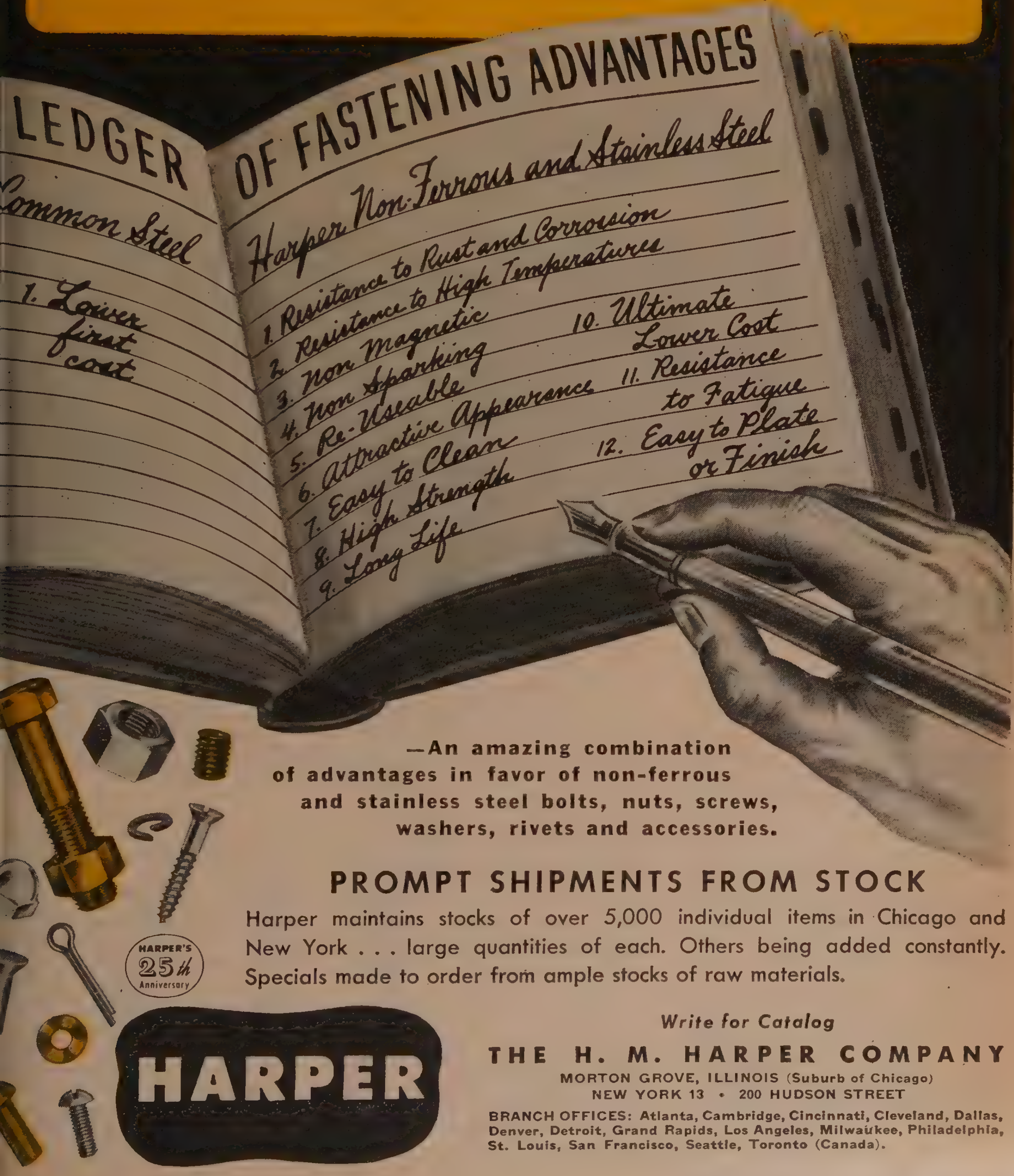

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WALTER G. PATTON

• 1948 vehicle output in U. S. and Canada set at 5,513,000 . . . Steel consumption by the auto industry will be at the highest rate in history.

DETROIT — Observers here who may have hoped to make a dramatic announcement at the last minute that an all-time automobile production record would be established during 1948 are now ready to settle for about 100,000 less than the 1929 total.

Total car and truck output has already turned the 5 million corner. Ward's estimate for all vehicles produced in U. S. and Canada through Nov. 26 is 5,031,750. The same agency's forecast for the year is 5,513,000. Ward's estimate is based on anticipated output of individual producers and is at a rate of slightly less than 100,000 per week for the five remaining weeks of 1948. This figure has been easily reached when all the automobile producers were operating at top speed.

December, however, will see curtailed output in several major plants. Chevrolet is scheduled to stop production about Dec. 17 for inventory and model changeover. The changeover period, while comparatively brief, will have a decisive effect on the industry total.

Pontiac will also wind up production of its present models just before Christmas. Chrysler assemblies are expected to continue through the remainder of the year. A Chrysler shutdown in January is expected to make a long delayed and often postponed model change.

Studebaker is going to make some important changes in its present models about the middle of December. Both body changes and improvements in the present power plant will be made. In addition, some important changes in the present Packard body are predicted by the experts who follow closely the production schedules in the various auto plants.

As mentioned above, it now appears that the 1948 car and truck production will fall about 100,000 short of the 1929 record. However, since auto parts production is several times the 1929 total, steel consumption by the auto industry will be at an all-time high for the year. And, with the present cars considerably heavier than the 1929 models, it is undoubtedly true that more steel will be used to build new cars and trucks in 1948 than has ever been consumed by the motor industry.

This statement is not intended to detract in any way from the amazingly successful efforts the industry has made to obtain an unprecedented amount of steel. At least a fifth of this tonnage has come the hard way — from conversion in which ingots have been bought at very high prices, usually from little known sources. The ingots are then rolled in the large mills, with the consumer paying the pyramiding freight and processing charges. This is costly steel—but it has kept the automobile industry rolling at close to record levels.

Looking at 1949, the only guesstimate to come from top auto officials so far is the prediction by C. E. Wilson, president of General Motors. Several weeks ago Mr. Wilson ventured an increase in car output of 10 pct during 1949, providing unanticipated barriers a
not raised against the industry.

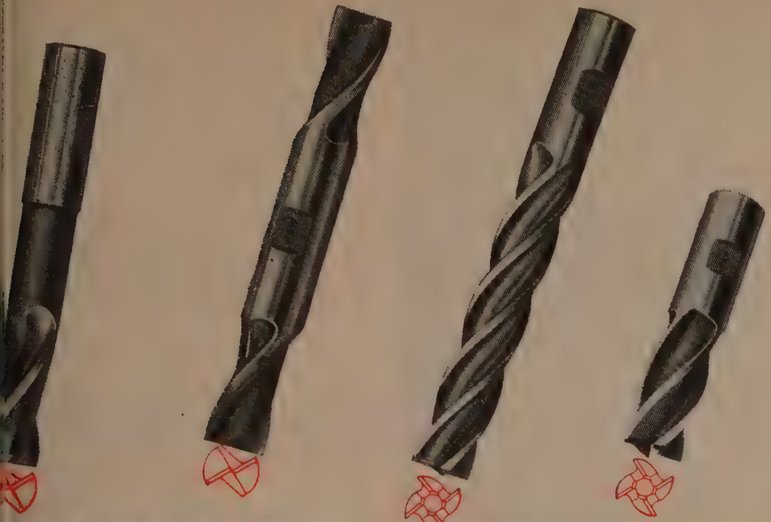
THE potential barriers are,
course, easy to find. Prese
information indicates that steel d
liveries to Detroit during the fir
quarter of 1949 will definitely
less than receipts during the fin
quarter of this year. Breakdow
in the mills, allocations and t
present uncertainties about gover
ment and military programs, it
reported, have been contributi
factors.

The biggest question in t
minds of Detroit steel buyers at t
moment concerns the volume
1949 allocations and the ability
steel producers to turn out mo
steel than they are making rig
now.

Turning to the demand for au
mobiles, it hardly seems possi
that the United States truck ma
ket will continue to absorb a r
ord number of vehicles. A year a
several prominent auto executi
predicted a decline in the numb
of trucks assembled. This pred
tion never came true. Instead,
truck industry will hit an all-ti
peak this year, totaling 1,375,
units. It seems hardly possible
anticipated reduction in truck p
duction will *not* materialize n
year, with truck prices consid
ably higher and heavy heavy
medium heavy trucks admitte
standing on the floor of many d
ers' salesrooms.

Another factor to be conside
is the effect of higher passen
car prices on the 1949 market. I
a safe assumption that every
post-war car will carry a p
boost. A fourth round of wage
creases now seems well on its w
In the past, car prices have soo
or later reflected wage raises.
many cases increases in price t
have run well ahead of wage boo
With the possible exception
Walter Reuther, no one expects
industry to sit back and absor
fourth round of wages with
raising prices. This will undo
edly bring car prices still fur

If you use fast-spiral end mills, you'll want to try "Hi-Helix"



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Available in single-end or double-end styles, in both regular and two-lipped types, and in a complete range of sizes, "Hi-Helix" End Mills reduce over-all costs on the most intricate milling . . . deliver finishes so fine that hand-work is drastically minimized. It will pay you to investigate. For free descriptive booklet, write

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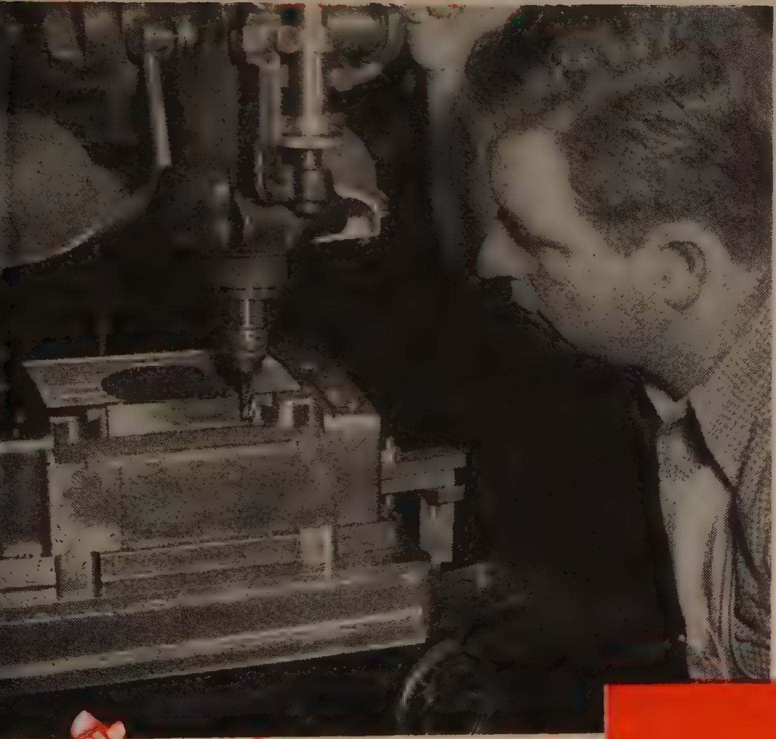

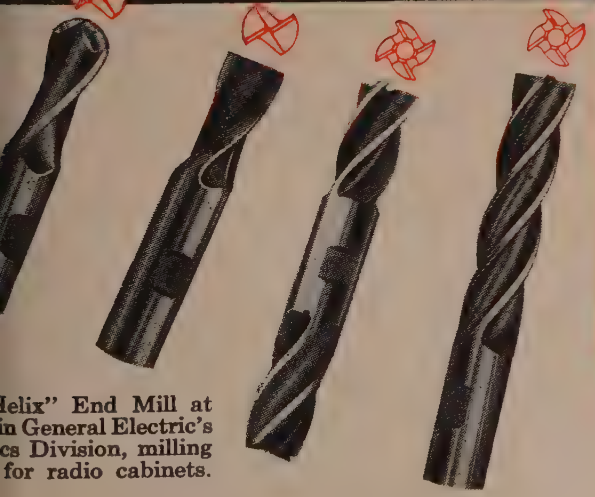

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in General Electric's
cs Division, milling
for radio cabinets.

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End Mills

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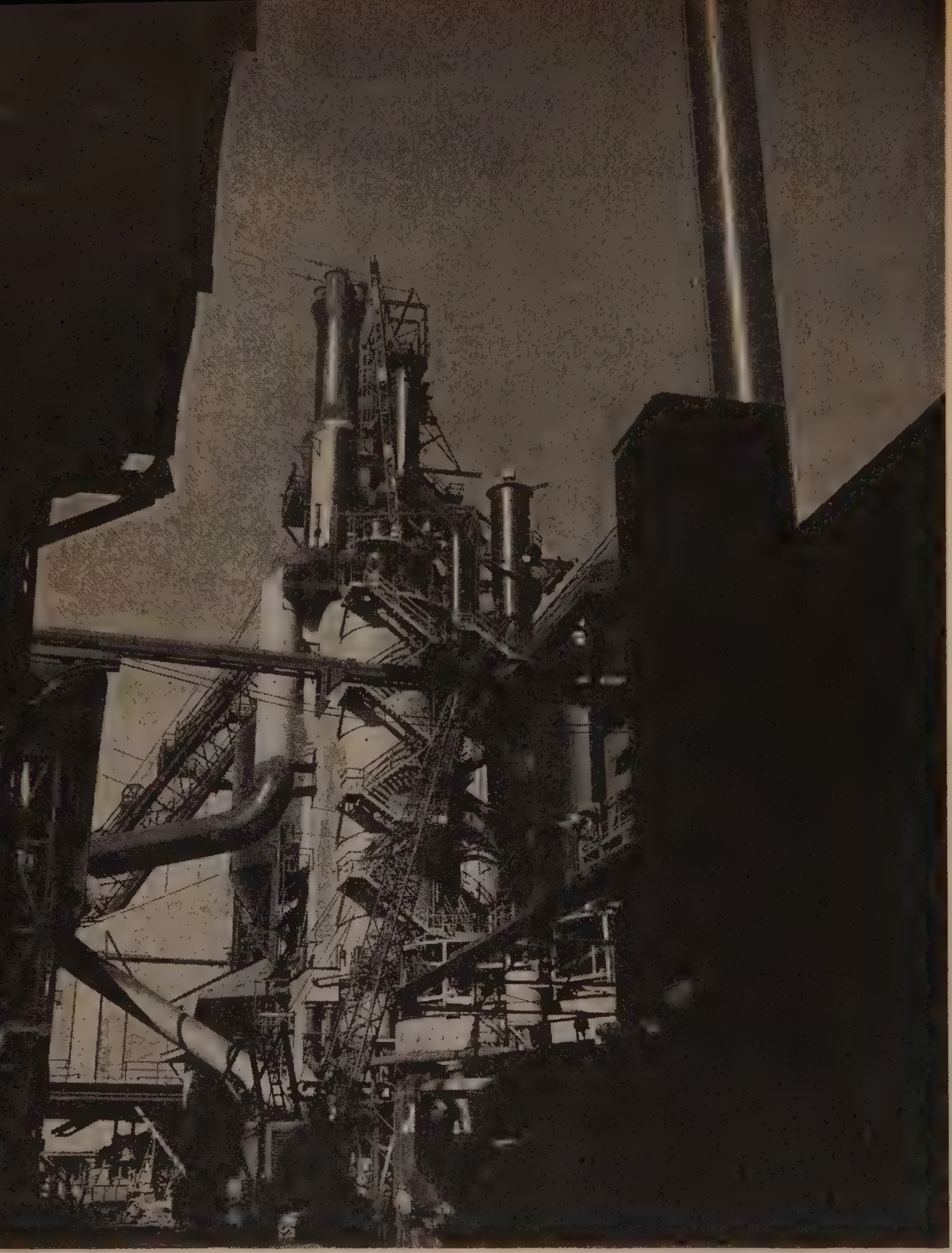


• • Ford's New 1400 ton blast furnace

out of reach of the workers' pocketbook.

DETROIT is not, however, too much alarmed about a possible return to a buyers market. Some auto executives contend they will actually welcome such a change. Many sales managers here have long regarded the present situation as unhealthy. Many contend a return to the job of selling cars (rather than writing orders and explaining away their failures to make deliveries) will be good for the industry.

What is generally not pointed out is the possibility that the market for new cars may shrink so fast the skeletonized sales staffs in the industry will not be able to keep pace with the decline.

Automobile sales executives, almost without exception, continue to be optimistic—at least on the surface. It is next to impossible to scratch a sales director deep enough to bring out a pessimistic response although most of this group is looking forward to a lot of aggressive selling during 1949. The things that are really happening to the auto market are always difficult to detect. Almost any survey taken on Livernois Ave. here (the used car Mecca) will show that prices on new-used cars are definitely lower than they were a few months ago. Convertibles, in particular, even in the Ford-Chevrolet-Plymouth price range, no longer bring a premium, it is reliably reported. Similarly, few of the higher priced cars, with the
possible exception of Cadillac, co
tinue to bring a substantial p
mium.

It should not be assumed t
present situation will continue
definitely. Last year, it will be
membered, used car prices fad
during the winter months. Late
the spring, prices bounded rig
back, in some cases, to very hi
levels.

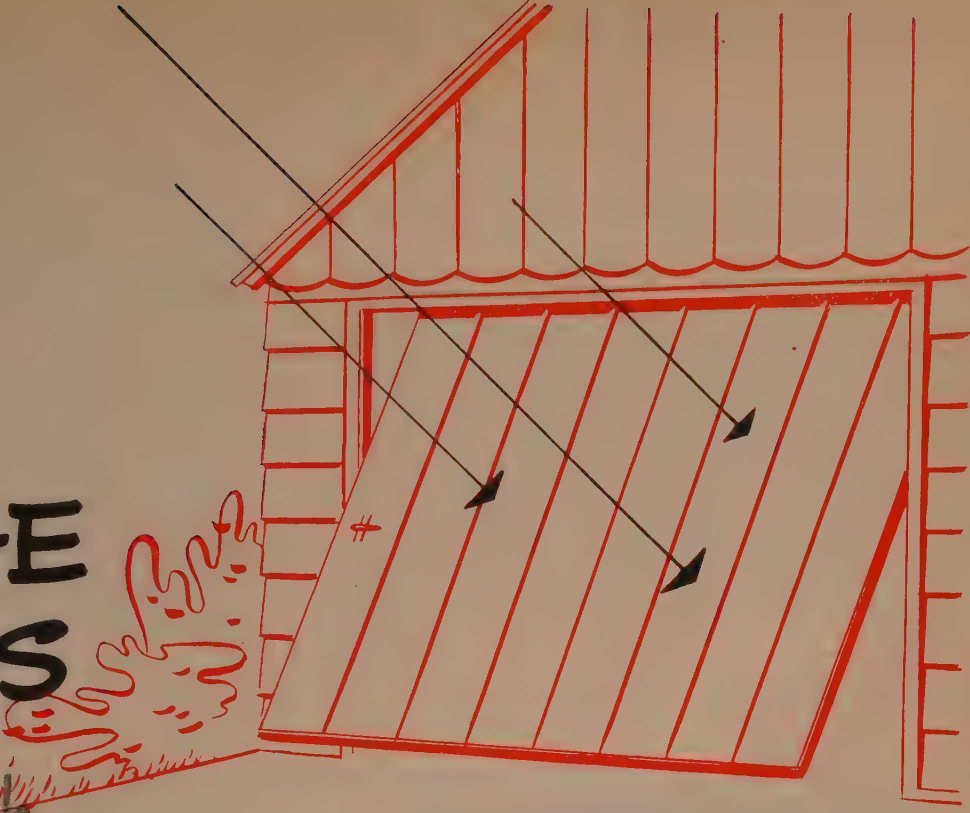
However, 1949 may well be d
ferent. Prices of new cars will c
tainly be higher next spring. So
of the "bounce" will undoubte
be taken out of used cars by rece
political developments, financing
strictions and the pronounced s
in the stock market. The numb
who think this way seems definit
to have grown in recent weeks, p
ticularly in Detroit's steel frat
nity.

SOME topsy turvey developme
are indeed taking place in
auto market right now. For
stance, a friend recently told t
reporter about placing an order
a convertible. The order was pla
nearly a year ago. The car, wh
is in the Ford-Chevrolet-Plymou
group, sold at that time for ab
$1700. The dealer called last w
to apologize for the delay and
explain that the car was ready a
waiting. One look at the price
was enough — $2408. (Of cou
this included some extras the de
er either hung on or couldn't det
with a clear conscience.) The pr
pect threw up his hands. Now h
going to buy a Buick, although
a convertible. He expects to h
at least $200 on the deal.

Car buyers who once figured
taking a new car they actu
didn't need and peddling it a
profit through a used car lot
going to find the going a li
rougher for several months,
least. Money can still be made t
way but the deals are harder
make and there are fewer lines
cars on which such profits can
realized.

It seems reasonable to exp
that developments in labor, in
mestic politics and in the inter
tional situation during the next
months are going to reveal whet
a substantial shrinkage has ac
ally taken place in the automo
market. This could be the true
uation. But you won't find m
Detroiters right now who'll ad
this has actually happened.

better
GARAGE
DOORS
built with



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Washington . . .

EUGENE J. HARDY

• Big Steel's views on f.o.b. mill selling sought . . . Kaiser urges accelerated depreciation . . . Cost of living changes puzzle economists.

WASHINGTON — The decision of Senator Capehart's Trade Policies Subcommittee not to subpena the big steel companies at this time may give the impression that Big Steel is off the spot on Capitol Hill for the time being.

But a look at the underlying reasons for this decision reveals that the industry is by no means off the spot. For the expressions of opinion by big steel in correspondence to the subcommittee are scheduled to be made a part of the record of the subcommittee hearings just as though they had been delivered personally by company representatives.

Senator Capehart's public hearings on the merits of delivered prices v. f.o.b. prices are now in their third week, and so far there has not been a single expression of opinion from any of the largest producers of steel. The Big Three have been increasingly conspicuous by their absence.

But, despite the current rumors and reports that subpenas have been issued by the subcommittee for the appearance on the witness stand of top officials of the big three, the top producers will continue to stay away from the witness stand—at least for the present.

The subcommittee and its counsel, William Simon, are looking for it this way: There are only two basic questions we want to ask Big Steel anyway. These are:

(1) How much more money are you getting from your customers under f.o.b. selling than under basing point selling?

(2) Would you return to selling at delivered prices if Congress makes it legal to do so?

The subcommittee further feels that it would be difficult to elicit any clear-cut answers to either of these questions from steel company witnesses on the stand. It would be too easy to dodge the questions by pointing to their involved nature and the lack of time for preparation of an intelligent answer.

SO Question Number 2—and possibly Number 1 as well—is going by mail this week to officials of the largest producing companies. The subcommittee feels that this method will allow every opportunity to consult with boards of directors, controllers, vice-presidents, and treasurers.

And the replies, when they arrive in Mr. Capehart's office, will be introduced into the record of the hearings.

The U. S. Steel Corp. went on record recently as stating that it would not return to basing point selling as previously practiced—even if it were made legal. The subcommittee is fully aware of this. But what the subcommittee and the Congress want to know most of all now is the industry's feeling on individual freight absorption.

The view of a great many members of Congress and of the moderate faction within the Federal Trade Commission is that industry
should be permitted to abs
freight when requested by a
tomer. If this view is to pre
now is the time for the big
ducers to take a sheet of pa
write down "Dear Senator,"
get behind the idea.

•

Henry Kaiser Grabs Ball
On Capital Funds Is

• • • Chalk up another one
Henry J. Kaiser. In the field
public relations the West C
industrialist has time and a
stolen the ball from the rest of
steel industry.

The most recent example is
Kaiser's urging the 81st Cong
to allow accelerated deprecia
on capital investments for inc
tax purposes in order to pro
sufficient funds for necessary
pansion as well as replacemen
existing equipment. Recogni
that the public is not inves
sufficient funds through the s
market to supply needed fu
Mr. Kaiser further urged the
tablishment of a rebate on inc
surtaxes for savings that a
payer plows into securities
real estate.

These proposals, particul
the one concerning accelerate
preciation, are not new in W
ington. In fact, the Federal
serve Board and the Comm
Dept. and other government a
cies have, over the past 18 mo
quietly urged steel industry
cials to come out publicly for
proposals. Not only would a
tion of these measures pr
additional funds, but their
proposal would help to get th
dustry off the hook in rega
the smoldering issue of ade
steel capacity.

For example, a government
ument with limited circulatio
this to say regarding the ste
dustry's depreciation charge
is apparent that depreci
charges are quite inadequa
replace physical assets."

Continuing, it is pointed
"that present earnings are

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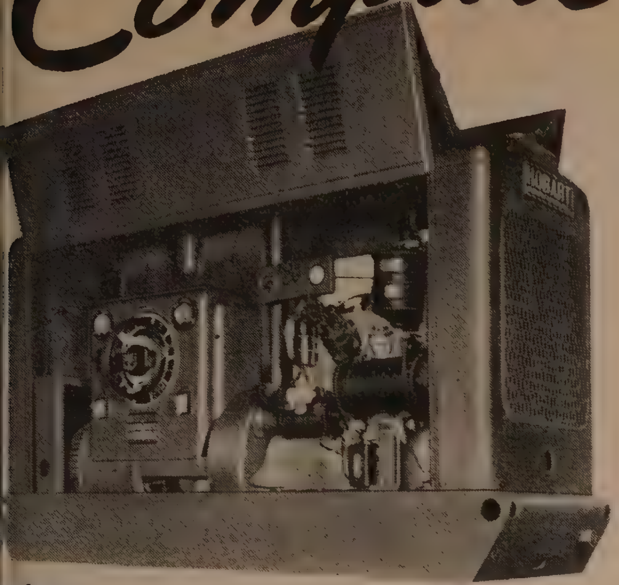

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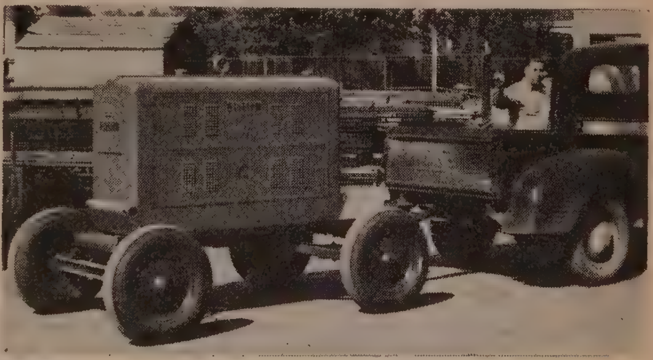

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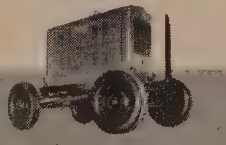
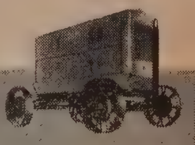


Speed Trailer. *Four wheel, rubber tired with transverse springs. For gas drive units in all sizes.*



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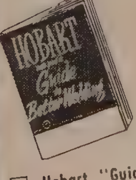

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stated by the amounts by which depreciation charges are insufficient to provide funds for replacement. If costs of plant facilities should ever return to their prewar level, present depreciation charges would then provide sufficient funds for replacement. On the other hand, any further rise in costs of new plant facilities would aggravate the inadequacy of current depreciation charges for future replacements."

In other words, sounder heads in the government have long urged a course of action to provide adequate funds for steel industry capital expenditures, but have waited in vain for public espousal of such policies by the industry.

•

BLS Price Index Drop Is Under Closest Scrutiny

Washington

• • • **With the** White House staff going ahead with the preparation of anti-inflationary proposals to be submitted to Congress, economists are trying to figure out the meaning of the latest price indexes (October) which have been released by the Bureau of Labor Statistics.

These showed the cost of living —some consumer goods—as having dropped .5 pct during the month. The economists are trying to determine if this might possibly be the break which means that all prices have reached or are about to reach their peak.

What has them puzzled is the fact that this is a repeat performance of last year and also early 1948. Each time, the indexes resumed their march upward after a short rest. However, this time there is a difference. The break in the general price line follows a break in food price levels which have been declining for three successive months.

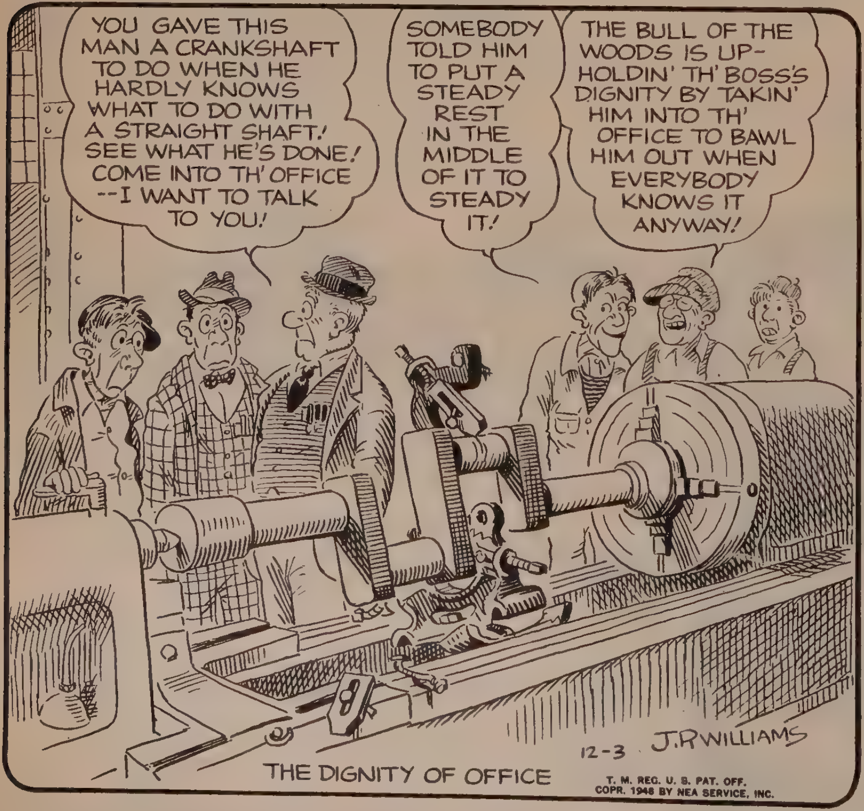
The drop in agricultural prices comes as no particular surprise to the BLS which has been privately anticipating continuation of the recent downward trend in prices of food and farm products. This expectation was based not only on bumper production this year but also on the fact that prices of these commodities are now at three times prewar levels. It is but a matter of time until these decreases are reflected in those cost of living goods such as clothing which depend on agricultural products for basic materials.

The current drop, some fe
may have some deterring effe
upon the expected demand for
fourth round of wage increas
It has stymied for the time bei
the immediate prospect of an au
matic increase in wage fields su
as for General Motors worke
where such increases hinge dire
ly upon the rise or fall of cost
living. It also gives support
employer resistance against imm
diate demands for wage boos
However, a moderate industri
wage increase is generally regar
ed as certain.

What might upset the appleca
is the chance of further price i
creases in those consumer goo
which draw on other than agric
tural goods for basic materia
These lines, in general, have ris
to only twice prewar levels. Mat
rials such as iron and steel ha
increased only about 70 pct abo
prewar, says BLS.

However, it looks as if the pre
sure is lessening for some durab
goods. The big backlogs have be
whittled down and in many cas
the demands are likely to depe
on current rather than accum
lated demand. In other word
many buyers may choose to wa
until prices are better, or at lea
they will be shopping around.

THE BULL OF THE WOODS BY J. R. WILLIAMS


YOU GAVE THIS MAN A CRANKSHAFT TO DO WHEN HE HARDLY KNOWS WHAT TO DO WITH A STRAIGHT SHAFT! SEE WHAT HE'S DONE! COME INTO TH' OFFICE --I WANT TO TALK TO YOU!
SOMEBODY TOLD HIM TO PUT A STEADY REST IN THE MIDDLE OF IT TO STEADY IT!
THE BULL OF THE WOODS IS UPHOLDIN' TH' BOSS'S DIGNITY BY TAKIN' HIM INTO TH' OFFICE TO BAWL HIM OUT WHEN EVERYBODY KNOWS IT ANYWAY!
12-3 J.R.WILLIAMS
THE DIGNITY OF OFFICE
T. M. REG. U. S. PAT. OFF.
COPR. 1948 BY NEA SERVICE, INC.

•

U. S. Exports to Russia Continue Their Declin

Washington

• • • **American exports** to Russ
are continuing their decline a
dropped from $1.2 million in A
gust to a low of $100,000 in Se
tember, according to the Cens
Bureau. The average month
value for the first half was $4
million.

On the other hand, Septemb
imports from the Soviet rose fro
$8.5 million to $9.8 million despi
a drop in manganese impor
from $4 million in August to $2
million in September. Furs a
manufactures were chiefly a
countable for the increased i
port volume.

Exports as a whole declined
September by about $63 million
a total of $916 million while i
ports remained relatively stab
at about $587 million.

Better, faster metal cleaning with these 2 Houghton aids:

1

FOR OIL-QUENCHED WORK

CERFAK LIQUID

ere is a new, remarkable cleaner for work
eated in a salt bath and oil quenched—always
tough cleaning job. It's *Cerfak Liquid,* and it
ill clean metal parts in one-sixth to one-
nth the time formerly required in an old-
yle alkaline cleaning bath.

o hand brushing, no long soaks, and no
pensive equipment required. Just heat a
to-75 solution to 180-200° F., and run the
ork through it. You'll be pleased at the amazing
sults, just as so many others have been.

2

FOR MACHINED WORK

HOUGHTO-CLEAN 220

This is the emulsion-type cleaner which was so popular at the Machine Tool Show last year. It has a high flash point, contains no kerosene, is not toxic or dangerous to use.

For cleaning oily parts in either still tanks or spray-type washers, you'll find *Houghto-Clean* 220 an outstanding value. It leaves a very slight film which aids in protection against rust, and which need not be removed before applying a final rust preventive. It does not attack the metal. Why not try it now, in your shop?

E. F. HOUGHTON & CO.

303 W. Lehigh Ave., Philadelphia

Service and Sales in all principal cities

West Coast . . .

ROBERT T. REINHARDT

• Law students at Stanford University analyze Supreme Court decisions on U. S. Steel - Geneva - Columbia - Consolidated deals . . . Conclusions offer food for thought, economically and politically.

SAN FRANCISCO—When the U. S. Supreme Court permitted Columbia Steel Co. to purchase Consolidated Steel Corp. it "thrust the western steel industry into its maturity dominated by a single company," according to an analysis of this decision made by law students at Stanford University, Palo Alto, Calif., and released in the first issue of the Stanford Law Review, released last week.

Although this case was primarily reviewed from the legal angle, the authors presented a comprehensive study of the economic factors as a background to the legal machinations which ultimately gave U. S. Steel Corp. ownership of the Geneva, Utah plant as well as the Consolidated Steel Corp.

Pointing out that westerners had hoped that the Geneva plant would be acquired by an independent western company after the war and that such a hope was shattered when U. S. Steel's bid was accepted by the government, the conclusion is reached that the courts apparently decided as they did because there was a "recognition of the fact that economic reality sometimes out-balances strict antitrust policies." In writing their conclusions, the law students state, "as western industrial growth continues, the problem will recur in a multitude of studies. If that growth is to be healthy, the West must face and resolve the dangers and advantages of further concentration."

Concentration of economic power of the type that the Federal Trade Commission considers harmful and that the temporary National Economic Committee has written 42 monographs to condemn, was necessary to bring a mature steel industry to the West, "almost overnight" according to the reviewers in referring to the purchase of Geneva by U. S. Steel.

It is interesting to note that the law students report that as early as 1945 Consolidated Steel Corp. had approached Bethlehem and Kaiser as well as U. S. Steel with an offer to sell its assets and good will.

IN analyzing the legal aspects of the purchase of Consolidated, the analysis states:

"**Structural Steel**—From 1936 to 1942, U. S. Steel subsidiaries booked 17 pct of the structural steel orders in the area, while Consolidated booked 5 pct. ('Bookings do not represent the exact amount of business done in any one year, because an order booked in one year may not be filled until the next. But these figures show that both U. S. Steel and Consolidated are important fabricators of structural steel in the area.

("U. S. Steel's eastern fabricating subsidiaries in both the structural and plate field may lose some of their western business through the recent elimination of the basing point system. 82 The Magazine of Wall Street 67, 1948.') In 1946, Consolidated booked 10.7 pct and U. S. Steel booked 13.1 pct. These companies are the two largest fabricators serving the area.

"In 1946, Bethlehem Steel booked almost the same percentage of the orders as Consolidated. Mosher Steel Co. shipped 8.9 pct; Chicago Bridge & Iron Works booked 6.4
pct; and 85 others booked sul
stantially smaller percentage
Thus acquisition of Consolidate
gives U. S. Steel a predominar
position in the structural ste
market—well over 20 pct as con
pared to Bethlehem, the neares
competitor, which has 10 pct
the business.

"Defendant minimized the don
inance of U. S. Steel and Consol
dated by showing that of all th
jobs bid on by either party, onl
2 pct in number and 7 pct in ton
were bid on by both. Further, d
fendant showed that of all jol
lost to competition, U. S. Steel lo
only 1.9 pct in tons to Consol
dated, and Consolidated lost onl
6.7 pct in tons to U. S. Steel. Th
lack of competition was explaine
by the fact that there is a diffe
ence in the type of structur
work normally bid on by the tw
companies. The court was suf
ciently impressed by this explan
tion to conclude that eliminatio
of Consolidated as an indepe
dent fabricator of structural ste
would not substantially lesse
competition.

"**Plate products**—Consolidate
is the largest plate fabricator
the West. From 1937 to 1946
produced $37 million worth
various kinds of pipe product
and in 1946 it had $10 million
unfilled orders. In 1946, the N
tional Tube Co., a U. S. Steel su
sidiary, sold $23 million worth
pipe in the Consolidated marke
Consolidated manufactures
pipe by a welding process, where
National Tube makes a soli
forged pipe. Because Conso
dated's product is a light-wall
pipe, useful only for low pressu
purposes, while National Tub
product is a heavy-walled, hi
pressure pipe, the court conclud
that there was no competition
tween the two.

"The Government, however,
bored the fact that both co
panies were producing large-siz
pipe in substantial quantities
a gas pipeline from Texas to Ca
fornia. Defendant minimized th
fact by stating that the use

4 Every Minute
5
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15
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45
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TOCCO-Hardening Pitman arms. Photo courtesy Kaiser-Frazer Corporation.

with TOCCO* Induction Heating

Your product may bear no resemblance to the steering gear Pitman arm shown here, but if it has to be hardened, annealed, brazed, soldered or forged, TOCCO can probably brighten your production picture, too—saving you time and money.

● Progressive engineers at The Kaiser-Frazer Willow Run plant have adopted speedy automatic TOCCO Induction Heating for surface hardening Pitman arms. The ball end is heated to 1600° F. in seven seconds—then quenched automatically for 4 seconds. The operation is fast, neat, fool-proof.

Material is S.A.E. 1045 steel, forged. Balls are hardened to 55-60 R.C., to a uniform depth of ⅛″. The remainder of the part is unaffected—retains its original ductile structure. Automatic TOCCO assures that metallurgical results are identical, every part the same, one or a million.

In your search for sound ways to reduce costs, speed production and improve your product, don't overlook TOCCO Induction Heating. Our engineers are ready to survey your plant, without obligation, of course, to determine where TOCCO can pay you a handsome profit.

THE OHIO CRANKSHAFT COMPANY

JUST PUSH A BUTTON
TOCCO

*Trade Mark Reg. U. S. Pat. Off.

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NEW FREE BULLETIN

THE OHIO CRANKSHAFT CO.
Dept A-12, Cleveland 1, Ohio

Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating"

Name____________________

Position____________________

Company____________________

Address____________________

City__________Zone____State______

Consolidated's product was due to the impossibility of getting the kind of pipe desired in a period of shortages. The court accepted the defendant's argument.

"Rolled steel—The government contended that the acquisition of Consolidated would eliminate competition for Consolidated's purchases of rolled steel between U. S. Steel and other producers of that product. Although Consolidated purchased less than 3 pct of the rolled steel sold in the area, the government stressed the fact that it purchased 12.9 pct of the plates and shapes. The court adopted the 3 pct figure as more accurately representing the true situation."

NO doubt some of the western steelmakers other than U. S. Steel subsidiaries will take exception to the rather sweeping statement contained in the conclusion to the effect that, "But such an analysis collides with the cold economic fact that if steel was to be made in the West without government subsidy only U. S. Steel could make it." This, of course, had reference principally to the ownership of the Geneva plant. The conclusion begins, "The court might have been justified, then, in granting the injunction by taking a different view of the fact, and by applying the strictest philosophy of a loose-knit combination cases. A high degree of control over the market, aggravated in this case by absentee ownership, would have been prevented." It is further stated, "the Corporation risked over $100 million to bring to the West a much-needed steel industry—a risk westerners were unwilling to take."

With the legal folderol out of the way, it is reported by Dr. Walther Mathesius, Geneva Steel Co. president, that trial runs of the new facilities for producing hot-rolled coils are scheduled to start operations in mid-December. Regular production of coils is scheduled for some time during the first quarter of 1949.

The expansion program, involving an expenditure of more than $19 million, will be completed with the loss of only about 20 shifts in operation of the plate mill. The mill was closed down for 17 shifts during September because of construction and installation work, and another shutdown over a "long weekend" will be necessary before the trial runs start.

Major items of the conversion program include the addition of two rolling stands to the four which were in the mill when the plant was acquired by U. S. Steel Corp., installation of two coilers at the end of the run-out table and extensive additions in the motor room.

Another recent improvement at the plant was the replacement of steam locomotives with Diesel-electric motive power.

SHARP EYES: *A series of long fingers on an automatic rotating wheel takes plate from the tin pot and turns it over so that the classifier can observe both sides without manual handling. The new device is a part of the modernized sheet and tinplate inspection setup at the Pittsburg, Calif., plant of Columbia Steel Co., a subsidiary of the U. S. Steel Corp.*

Aluminum Output is Hit Most by Power Shortage

Seattle

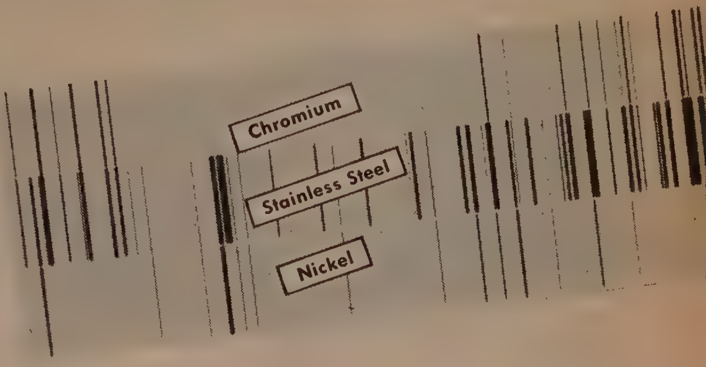
• • • **Shortage of** electric power in the Pacific Northwest continues to be of grave importance to all industries with aluminum production most seriously affected. Thus far the electric steel furnace operations at Isaacson Iron Works and Northwest Steel Rolling Mills Inc. here, and the new furnace just put in operation by the Cunningham Steel Foundry in Tacoma, and the two furnaces of the Oregon Steel Mills of Portland have not been seriously affected.

Public officials and industrialists met last week to pave the way for mandatory curtailment of the use of electricity in the event the present voluntary conservation program fails—which it apparently will, according to best reports. The voluntary "brownout" has been in effect since the middle of October, but savings of power are said to not exceed 5 pct.

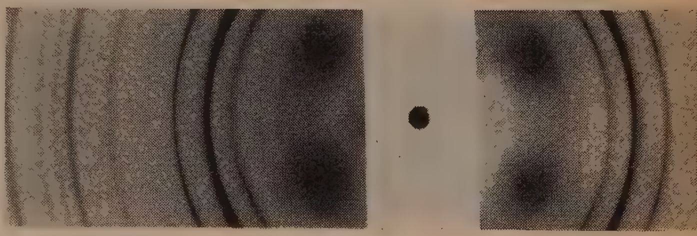
It was pointed out at the meeting that the Northwest power pool, comprising the major portions of five states and part of British Columbia, will have an estimated power shortage of 145,000 kw during the peak hours of January. However, if the water supply becomes critical, the shortage could run as high as 431,000 or 453,000 kw.

Every available generator is operating at an overload, according to the Bonneville Power Administration which has already turned down more than 200,000 kw demand from the aluminum industry during this year.

3 ways photography shows composition of materials



Spectrography to study composition qualitatively and quantitatively . . . Using photography to record the light spectra emitted when a specimen is placed in an electric arc or spark, this technic provides an element-by-element analysis of materials, as shown by this spectrogram of a stainless steel specimen. It indicates that the specimen contains chromium, nickel and iron, but none of the other special alloying elements often included in commercial stainless steel to impart certain properties.



X-ray diffraction to study crystalline composition, stresses, thermal history . . . Using photography to record x-rays that pass through a specimen in certain directions, this technic provides a characteristic pattern of a material. Shown here is the pattern of the stainless steel specimen used above. This pattern shows, by the diffuse spots in the central circle, that the material has different properties in different directions—an undesirable condition for some applications.

Electron diffraction to study thin films, layers, surface reaction products on materials . . . Using photography to record electrons reflected in certain directions by the surface of a specimen, this technic also provides a characteristic pattern, such as this one of a very thin layer formed on the surface of the same stainless steel specimen, when treated with concentrated nitric acid. This treatment, known as passivation, and used to enhance corrosion resistance in stainless steel, is still little understood. Much of the answer will come from electron diffraction studies such as this.

Testing of materials by the above photographic technics can be accomplished in your own research department, or by arrangement with a number of outside organizations that specialize in such work. Why not look into the usefulness of these testing procedures for plant control purposes in your own organization? Kodak will be glad to supply you with more specific information.

Eastman Kodak Company, Rochester 4, N. Y.

FUNCTIONAL PHOTOGRAPHY

. . . is advancing industrial technics

Kodak

ROY E. SMITH, president, Stefco Steel Co. Inc.

- **Roy E. Smith** has been elected president of the Stefco Steel Co. Inc., Michigan City, Indiana. Mr. Smith joined Stefco after two years as president of Bennett Industries, Inc. Prior to that he served as vice-president of Kelly Steel Works, Inc. and as division manager and general manager of American Rolling Mill Co. subsidiaries.

- **H. E. Balsiger** has been appointed director of engineering for Landis Tool Co., Waynesboro, Pa. Mr. Balsiger joined the company in 1925. **R. E. Price,** formerly assistant chief engineer, has been named to succeed Mr. Balsiger as chief engineer. **W. E. Happel** has been appointed assistant chief engineer. Mr. Price has been associated with Landis Tool since 1929, Mr. Happel since 1926.

- **R. J. Leckrone** has been appointed vice-president in charge of engineering and sales, Pittsburgh Engineering & Machine Co., Pittsburgh.

- **Leigh Willard** has been elected chairman and **E. L. Clair,** president, Interlake Iron Corp., Cleveland.

- **W. E. Madden** has been appointed vice-president of George Haiss Mfg. Co., Inc., New York. Mr. Madden has been sales manager of the conveyer division of Haiss since last year.

PERSONALS

○ ○ ○

- **J. L. Calderella** has been elected vice-president and a director of Utica Structural Steel Inc., Utica, to fill the vacancy caused by the death of **Henry H. Rathbun.** Mr. Calderella has been works manager of the corporation.

- **Richard Hoagland** has been appointed chief engineer of automatic arc welding applications for Acme Pattern & Machine Co., Inc., Buffalo. Mr. Hoagland joined Acme Pattern after seven years with Westinghouse Electric Corp., where he served as metallurgist of the Canton Naval Ordnance plant and more recently as equipment engineer in the Arc Welding department at the Buffalo Motor division. Previously he had been associated with Republic Steel Corp.

- **Wendell W. Anderson** has been elected a member of the board of directors of Crucible Steel Co. of America, New York. Mr. Anderson is president and treasurer of the Bundy Tubing Co., Detroit.

- **Albert Baron** has become associated with the Erman-Howell division of Luria Steel & Trading Corp., Chicago. Mr. Baron formerly served as manager of George Birkenstein & Co., and prior to that was purchasing agent of the Whiting, Ind. plant of Federated Metals division of American Smelting & Refining Co. He has been in the scrap industry for the past 20 years.

- **W. G. Souder** has been appointed western sales representative of the new San Francisco district office of coal chemical sales for U. S. Steel Corp. Mr. Souder has been succeeded as coal chemical sales representative in Chicago by **C. W. Johnson,** who has been transferred there from New York.

- **Hans A. Bohuslav** has been named special engineering consultant to the president of R. G. LeTourneau, Inc., at Longview, Tex. Mr. Bohuslav formerly served as vice-president in charge of engineering and production, Engineering Controls, Inc., Los Angeles.

ALLYN E. HARPER, chief plant engineer, Oliver Iron & Steel Corp.

- **Allyn E. Harper** has become chief plant engineer, Oliver Iron & Steel Corp., Pittsburgh. He had formerly served as plant engineer for General Cable Corp. and prior to that was connected with Allis Chalmers Mfg. Co., Coal Carbonizing Co. and more recently, the F. H. McGraw Co.

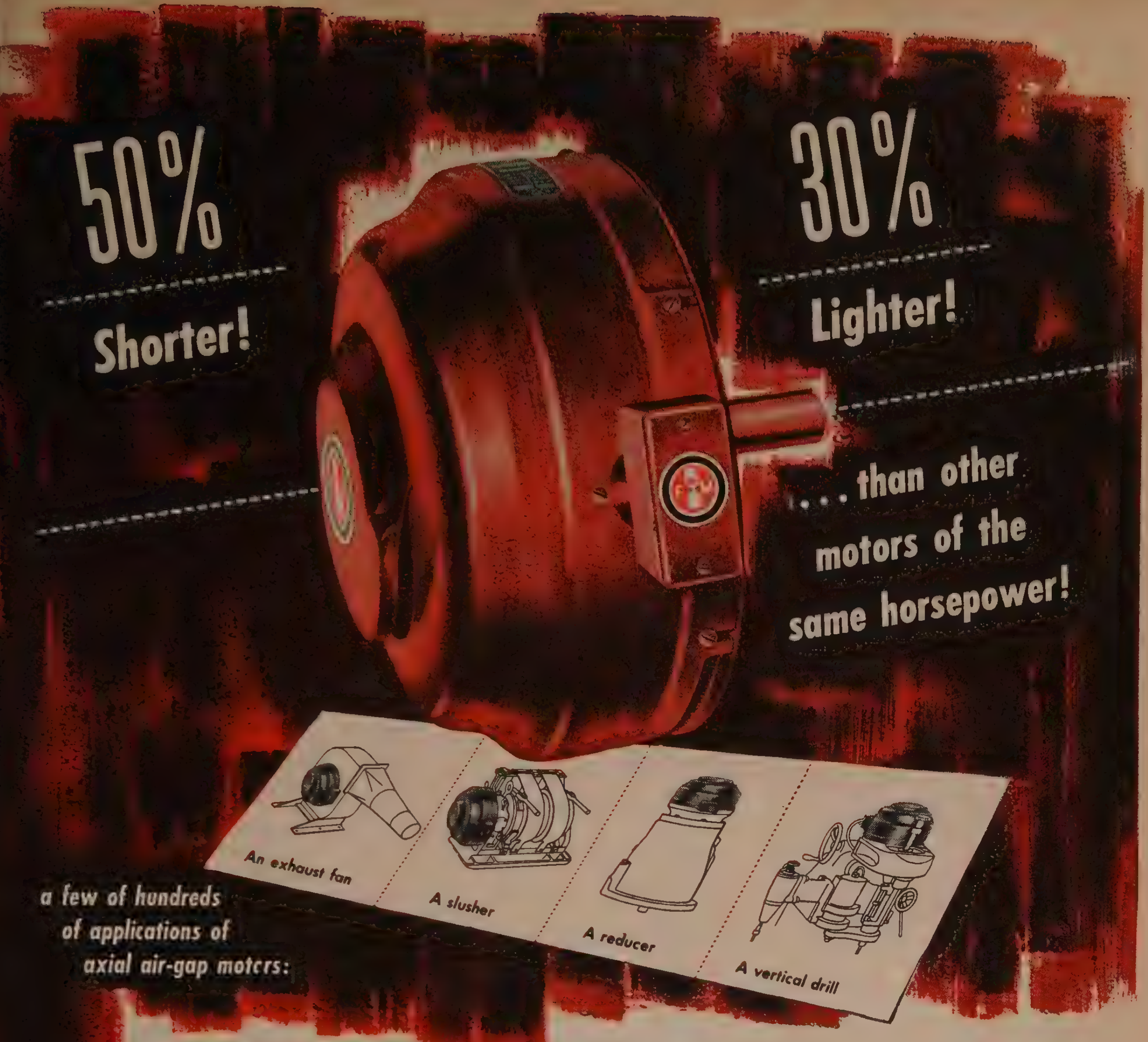
- **Aubra A. Gardner** has been named works manager, Milwaukee Gear Co., Milwaukee. Mr. Gardner formerly had charge of the gear division of Kearney & Trecker Corp.

- **James A. Bertha** has been appointed regional manager for the southwest region, Tracy Mfg. Co. Pittsburgh. Mr. Bertha has hi headquarters in Houston.

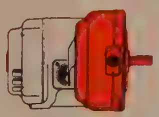
- **Herman B. Robbins** has been appointed manager of the new Hil Diesel Engine Div., Drake America Corp., New York. Mr. Robbin formerly had charge of expor sales.

- **Robert W. Galvin,** a director o Motorola, Inc., Chicago, sinc 1945, and formerly assistant to th vice-president in charge of th auto radio division, has been appointed executive vice-presiden succeeding the late **Joseph E. Galvin,** one of the founders of Galvi Mfg. Co., a forerunner of Motorola, Inc.

- **Lewis W. Rose** has been name assistant comptroller in charge c cost and statistics for Columbi Steel Co., San Francisco.


50%
Shorter!
30%
Lighter!
. . . than other motors of the same horsepower!
a few of hundreds of applications of axial air-gap motors:
An exhaust fan
A slusher
A reducer
A vertical drill

THE FAIRBANKS-MORSE *axial air-gap Motor!**



NEWEST THING IN ELECTRIC MOTORS! For many applications the desirability of smaller, lighter, more compact motors has been well recognized—but not until the development of the axial air-gap motor by Fairbanks-Morse engineers has the need been filled. Here, then, are motors that will blend with the contour of the driven member . . . motors that are lighter, smaller, and more compact . . . sturdy, two-bearing motors that will give more than the required performance.

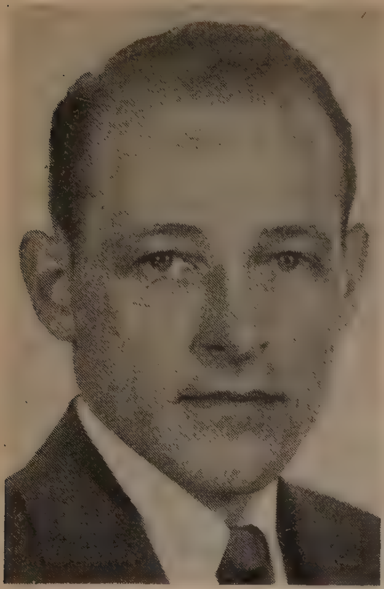
Perhaps you have already heard of the axial air-gap motors. That would be because they have already been proved on thousands of installations during a long period of test. If you would like to learn more about them—or any of the widely known line of conventional Fairbanks-Morse motors—see your Fairbanks-Morse representative.

**Air-gap dimension is measured parallel to the axis of the shaft as compared to a radial dimension in a conventional machine.*

FAIRBANKS-MORSE

A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS • SCALES • MOTORS • GENERATORS
PUMPS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS



FRED E. KENDALL, vice-president, director of research and sales, International Rustproof Corp.

McMILLAN ROBINSON, sales manager, Metal Products Div., Kopper Co. Inc.

• **Fred E. Kendall** has been appointed vice-president, director of research and sales, the International Rustproof Corp., Cleveland. Dr. Kendall served as chief chemist in charge of electrochemical research for Republic Steel Corp. and more recently as director of research for Master Builders Co.

• **E. P. Walters** has been promoted by Chicago Vitreous Enamel Product Co., Cicero, Ill., to the position of district manager, with headquarters in St. Louis. Mr. Walters joined the company in 1935 and until his new appointment had been service man.

• **J. M. Nicholson** who joined the Santa Fe Railroad Co. in 1912 and has recently served as assistant to the operating vice-president, has been appointed director of the department of research of the company, with headquarters in Chicago. **J. P. Morris**, now general superintendent of the mechanical department, has been appointed assistant to the operating vice-president of the road succeeding Mr. Nicholson.

• **Martin C. Butters**, consulting engineer, formerly connected with E. I. duPont de Nemours & Co., has joined the staff of the O. K. Tool Co., Inc., Shelton, Conn.

• **McMillan Robinson** has been appointed sales manager, Metal Products Div., Koppers' Co., Inc., in Baltimore. Mr. Robinson recently resigned as vice-president of Ocean City Mfg. Co., Philadelphia, to accept the new appointment.

• **James C. Rankin** has been promoted to the position of executive assistant, Glidden Co., Cleveland. Mr. Rankin joined the company in 1942 and formerly served as manager of specialty sales. He became director of Glidden's retail stores and was later made assistant to the manager of industrial and transportation sales.

• **B. R. Stratton** has been appointed head of the new branch office of Cutler-Hammer Inc., at Tulsa, Okla.

• **Albert E. Sidwell, Jr.**, has been named assistant director of research and **Ralph F. Wolf** manager of compounding research, Columbia Chemical division of Pittsburgh Plate Glass Co., Barberton, Ohio. Dr. Sidwell formerly directed the laboratory of the American Medical Association. Mr. Wolf prior to joining Columbia research department early this year, served as technical director of Standard Chemical Co.

• **John S. Cort, Jr.,** has been nam
assistant to the president of t
Martin Dennis Co., Newark, N.
a subsidiary of Diamond Alka
Co., Cleveland. Mr. Cort succee
Charles E. Grant who has recent
been promoted to manager of chr
mium chemical sales for Diamo
Alkali and transferred to Clev
land. Mr. Cort has been associat
since 1947 with the Cincinna
plant operated by Diamond
standard silicate division.

• **Bruce H. Wallace** has bee
elected treasurer and a director
Otis Elevator Co., New Yor
which duties he performs in add
tion to those of vice-presiden
Percy L. Douglas, a vice-presiden
has been elected a director of t
company.

• **A. Edward Jennens** has bee
appointed district manager of Ca
dox Corp., Chicago, with headqua
ters in Detroit. Mr. Jennens u
til recently had been connect
with the architectural firm
Smith, Hinchman & Grylls, D
troit.

• **William N. Boyd** has been ma
superintendent, industrial faste
ers manufacturing, Oliver Iron
Steel Corp., Pittsburgh. **Mart**
Schmunk has been appointed chi
inspector; **Albert M. Schmidt,**
sistant chief inspector; **William**
Lehrman, superintendent, rece
ing warehousing and shipping a
Howard F. Kunkle, superinte
dent, maintenance and die shop.

• **D. L. Frawley** has been elect
chairman of the board of Mac
intosh-Hemphill Co., Pittsburg
succeeding **H. V. Blaxter,** w
died. Mr. Frawley, a director
the concern for more than
years, has been associated wi
Mackintosh-Hemphill.

• **James R. Donnalley** has be
appointed manager of the Gener
Electric Co.'s silicone manufactu
ing plant at Waterford, N. Y. D
Donnally joined the company
the chemical section of the
search laboratory in 1943. **Herbe**
M. Brusman has been appoint
manager of the employee relatio
division of the GE Chemical De
Mr. Brusman formerly served
chief sales consultant and later
a personnel consultant for Ebas
Services Inc., and as sales eng
neer for Pennsylvania Power
Light Co.

Arthur K. Watson has been
med assistant to the manager
the International Business Ma-
ines Corp.'s World Trade divi-
on in New York. He previously
rved as sales representative.

A. T. Blakemore has been ap-
inted sales promotion manager,
nlon Div., Conlon-Moore Corp.,
icago. **Earl Stiefel** has been
ade general director of pur-
ases for the corporation.

Chester E. Carroll has retired
general manager of the Asso-
ated Lines sales division of B. F.
odrich Co., Akron. **M. G. Hunt-
gton,** assistant general manager
the division, has been named his
ccessor. Mr. Carroll joined the
icago district as a salesman in
18. Mr. Huntington started with
e company in 1923. **William R.
kan** has been named manager
the San Francisco district of
e Replacement Tire sales divi-
n of Goodrich, succeeding **R. J.
omis,** who is retiring after 18
ars in the San Franciso post.
evious to his new appointment
. Dakan had been regional store
nager in the Pacific sales divi-
n. Mr. Loomis joined the com-
ny in 1912 and Mr. Dakan in
30.

John I. Snyder, Jr., chairman of
e board and president of Pressed
eel Car Co., Inc., has been
cted a director of Federal Ma-
ine & Welder Co., Warren, Ohio.

Robert L. Westbee has been ap-
inted general manager for the
wly-formed electrical insulation
d sound recording tape division,
nnesota Mining & Mfg. Co., St.
ul.

Oscar A. Lenna has been elected
esident and general manager of
Blackstone Corp., Jamestown,
Y. **A. E. Schoebeck** has been
med executive vice-president;
staf A. Lawson, vice-president
charge of the automotive divi-
n; **Reginald Lenna,** vice-presi-
nt in charge of operations;
M. Wicht, vice-president in
rge of home appliances manu-
turing division; **Harry A. Len-**
secretary and treasurer and
ss W. Alden, assistant secre-
y-treasurer.

PAUL A. MAY, controller, Mine Safety Appliances Co.

FRANK W. EICHMAN, sales manager, Joseph T. Ryerson & Son, Inc.

- **Paul A. May** has been appointed controller of Mine Safety Appliances Co., Pittsburgh. Mr. May formerly served as assistant comptroller of Minneapolis-Honeywell Regulator Co., and had previously been associated with Fruehauf Trailer Co. and A. J. Gerrard Co.

- **A. L. Berlin** has been elected vice-president in charge of sales, Pyle-National Co., Chicago. **W. A. Wulle** has been appointed advertising and sales promotion manager and **F. M. Currie** has been named manager of industrial sales.

- **Frank W. Eichman** has been appointed sales manager of the Philadelphia plant of Joseph T. Ryerson & Son, Inc. Mr. Eichman started at the New York plant of the Ryerson organization in 1922 and later served as sales representative in the New York area. In 1938 he moved to the Philadelphia plant where he continued in that capacity.

- **L. H. Campbell, Jr.** has been elected a director of American Steel Foundries, New York.

OBITUARY . . .

- **O. C. George,** 74, formerly chief draftsman at Fort Pitt Bridge Works, Pittsburgh, died Nov. 15.

- **James C. Regan,** 76, retired president and general manager, E. Horton & Sons, Inc., Windsor Locks, Conn., died recently.

- **Frank J. Black,** 76, retired superintendent of Schoen Steel Wheel Works, a subsidiary of Carnegie-Illinois Steel Corp., died recently.

- **Heyliger Church,** 55, vice-president in charge of sales, Weatherhead Co., Cleveland, died Nov. 13.

- **Melvin Munson,** 62, vice-president, White Tool & Supply Co., Cleveland, died Nov. 9.

- **William H. Curley,** 58, American Steel & Wire Co., Boston, died Nov. 11.

- **George G. Small,** 84, retired vice-president, United Engineering & Foundry Co., Beaver, Pa., died Nov. 15.

- **Joseph A. Kilpatrick,** 80, chairman of the board, Dominion Wheel & Foundries, Ltd., Toronto, Ont., Canada, died recently.

- **Thomas K. O'Connor,** vice-president and treasurer, Haarmann Steel Co., Holyoke, Mass., died recently.

European Letter . . .

• German economic situation at crucial point . . . Upward trend of prices and cut in purchasing power cause for gravest concern . . . Threat of inflation endangers whole of west German recovery.

LONDON—On November 17 General Robertson warned the German authorities in Frankfurt that German recovery was gravely endangered and implied that the future of the D-mark was a matter for considerable alarm. A currency without backing clearly rests on public confidence. Moreover, the whole economic situation in western Germany stands today at a crucial point between conflicting inflationary and deflationary influences. To inject a strong note of pessimism into political and industrial circles at this moment can threaten the whole of west German recovery.

The chief anxiety is caused by the rise in prices. It may be said in passing that the scale of the rise is still a matter of fierce dispute. Compared with the fictitious pegged prices of 1936 which prevailed until the currency reform, prices have risen. But compared with the old black market prices which in fact ruled the market, many prices have fallen. But the trend is upward and it is this that causes concern. It may be asked how prices can rise when the purchasing power has been cut in the ratio of 15.38 to 1? The note circulation is now about 6 billion D-marks, for a population of 45 million. With current accounts, the total ready cash is 11 billion. It does not appear dangerously excessive; nevertheless it is. The reason for the rise in prices is, in the first place, that German industrialists and merchants have entirely failed to play a responsible part. Dr. Erhard's hope that the removal of price controls would permit a normal competitive price structure to be formed has been brought to nothing by the activities of the business people in whom he put his confidence. Rather than face price competition, they have banded together to enforce price discipline—in other words, to insure that profits are not reduced by outsiders who cut production costs. The result is that in many sectors which most directly affect the man in the street—for instance, textiles and footwear—there have been exorbitant increases.

There are other reasons for the new threat of inflation. Money is circulating rapidly, through black channels, out of reach of the banks. The proportion of notes to current accounts is completely distorted in favor of notes. The banks are therefore unable to squeeze unsound business out by use of the weapon of high interest rates. Individuals are granting each other credits, or demanding payment in suitcases full of cash. The banks themselves are granting short-term credits too freely and budget deficits add to the money available.

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THE money now circulating is regarded by its owners as a gift for spending or speculation. This is because it resulted from the so-called quotas per head distributed in the course of currency reform, and from the proceeds of the vast stocks of hoarded goods which were put on the market in June. A further injection of purchasing power was made in October, against the sound advice of the German bankers when 20 pct of the remaining blocked accounts were freed.
This lamentable decision, which w
made on the insistence of
French Military Governor, was
only inflationary, but dealt a sev
blow to confidence. Although
public had been led to believe t
the cancellation of accounts was
an end, 70 pct of the accounts wh
remained blocked after the first c
cellation in June were wiped o
Only 10 pct were blocked for use
long-term credits to indust
which is starved of capital.
French, it may be noted, are also
blame for another danger to the
mark. A lively trade in D-ma
and smuggled German goods g
on between the French zone a
Switzerland.

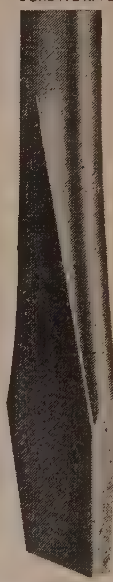
A result of the new fear of in
tion is inevitably the diversion
purchasing power into hoar
goods and diamonds. A new c
rency reform is expected. It m
only take the form of an exchange
notes at par; but it would catch
black marketeer who keeps his ga
in cash. Rumors of a new refo
have been spread by speculators a
Communists ever since the first t
place, and have increased lately.
the same time, the so-called *Last*
ausgleich, or capital levy for
purpose of equalizing war loss
hangs over the community, and
courages dishonest bookkeeping.
parties are pledged to this sche
and nobody dares to admit that i
folly. General Robertson has,
fact, once again urged the Fra
furt administration to hurry.
the crying need is to drop it, w
all the other illusions that h
blocked recovery. The only pr
tical and harmless way of achi
ing any equalization is by way
income tax, and then only after
community has begun again to
veal incomes and to pay taxes.

EVASION of taxes is the th
reason why goods are be
hoarded and books faked. Si
money became of value again, on
small proportion of taxes has b
collected. This situation in tur
related to the question of occu
tion costs. Ever since the curre

MAIL SCALE
CAPACITY 2 POUNDS BY OUNCES
USE ZONE RATES FOR
ZONES
LOCAL
MODEL 1548

TYPE "A" ASSEMBLY BIT

COMMON SCREWDRIVER



Again... CLUTCH HEAD *Screws Scale Down Assembly Costs...*

ELIMINATE SKID DAMAGE AND SMOOTH OUT PRODUCTION

HANSON, a Chicago name nationally recognized as symbolic of weight accuracy, has this to say as to why their complete line of 1949 models is being standardized on CLUTCH HEAD Screws:—

"Compared with the use of other recessed head screws, change-over to CLUTCH HEAD has given us immediate relief from several costly and annoying assembly problems."

"Over and above faster, smoother operation, the non-tapered drive has freed us from the expense and delay arising out of skid damage."

"The Lock-On has definitely simplified for us screw placement in 'awkward' spots in our assembly."

"The durability of the Type 'A' Bit, plus its easy reconditioning, is a time and money saver. Our tool maintenance cost is now almost zero."

"The fact that CLUTCH HEAD operates with a common screwdriver rates high with us as a service factor."

Regardless of the size or type of screw required, these and other exclusive CLUTCH HEAD *advantages will prove their superiority and economy in every phase of assembly production. Their value will be immediately apparent on cursory examination, so we invite you to send for screw assortment, sample Type "A" Bit, and illustrated Brochure . . . to come to you by mail.*

CLUTCH HEAD
- SCREWS -

UNITED SCREW AND BOLT CORPORATION

CLEVELAND 2 CHICAGO 8 NEW YORK 7

reform gave them a firm base from which to conduct their sorties, the German politicians and press have pressed a furious campaign against the payment of occupation costs, which has convinced every German that he is chefly asked to pay income tax to keep a foreigner in luxury on his soil. For their part, the State Administrations have an interest in showing Budget deficits with which to confront Military Government. As General Robertson pointed out, some of the states give a picture of imminent bankruptcy. There is no doubt that the occupation costs have been swollen by too carefree military authorities. British troops, for example, receive as much of their pay as they like in German currency, and this portion is then charged to the German budgets. In all, estimates of the total costs at present being borne by the Germans varies between 3½ billion and 5 billion D-marks a year. Either figure represents too high a charge. This is admitted, and the forthcoming Occupation Statute will impose an outside limit.

At the moment, the German authorities appear to pin their hopes for avoiding inflation upon the reduction of occupation costs. They also advocate the handing over of foreign trade, now in the hands of the Joint Export-Import Agency, in the hopes that Germans will buy enough food and consumer goods to saturate the market. General Robertson has, however, declared that no further imports than those already provided for will be forthcoming, and the Agency (though it it handing over exports to the Germans) is retaining control of imports. However, a program of imports is provided, including ready-made clothing; and the flow of ERP goods has not yet begun. Added to increasing internal production, which officially stands at over 70 pct of the 1936 figure and is probably higher, these imports may exercise a deflationary effect.

IT is typical of the attitude of the Frankfurt authorities that they should pin their chief hopes for combating inflation upon two changes in Allied policy, not on new policies of their own. They appear to watch the struggle between inflation and deflation as spectators while the real decisions are taken by the industrialists and merchants on to whose necks the rein has been thrown. There are, however, signs that another force in modern industrial democracy is preared to take a hand.

In the present uncertainty, the German working man, and, still more, the pensioners and refugees, see little beyond the fact that they can hardly make ends meet. They have almost forgotten that before currency reform, though they had plenty of money, there were practically no goods to buy at the legal
prices. All they can grasp is th
prices have risen, but not wag
To a people used for decades to t
system of buying permits and co
pons, it seems plain that the sta
which provides the goods must gi
the money to buy them.

It is not at all obvious to the Ge
man public that the destruction
wealth in Germany means th
wages and salaries should lag b
hind prices. On the other han
this argument has gone too far
the other direction. Manufacture
intent on an easy way of cutti
costs, and the Anglo-American co
trollers anxious to preserve stab
ity, are obsessed with the nightma
phase "wage-price spiral." In fa
there is no valid reason why a spi
should start if wages were rais
to a limited extent above their pre
ent level, which is hardly above th
of 1938, as part of the general a
justment to the world level. The ri
should keep well behind that
prices, but some increase is jus
fied. But so strong is the power
greed and the catch-phrase, any ri
now would undoubtedly be seiz
upon as a reason for a further i
crease in profits. The Germ
worker, it appears, will continue
have to pay half a week's wag
for a shirt. He will also have
bear the fact that in one way t
return to a money economy h
lowered his income, since the pra
tice of adding goods to the mon
wage has now almost been aba
doned.

THE first rumblings of a sto
have, however, been heard. T
24-hour general strike which to
place last week was a portent.
real significance has been obscur
by the Union's demand for fre
controls to be imposed on pric
In fact, though the demonstrati
was not, as the Communist Tra
Union Federation in Berlin imn
diately proclaimed, directed agai
the Marshall Plan, it was larg
political. With the strike, the
ganizers actually launched a ca
paign to force Military Governme
to drop its veto on participation
trades unions and works councils
policy-making and manageme
General Robertson has now propos
that an advisory council of empl
ers and trade unionists should
formed, but this will not satisfy
Union leaders. Lack of funds ma
them unable to win victories in
field of wages. They are all
more determined to gain a footh
in the conduct of the German ec
omy.

PUG NOSE: *This is the world's first 4-jet airliner which was built in Britain. The ship was completed recently and exhibited at the S. B. A. C. display of aircraft at Farnsborough, Hants.*

FOR PRECISION TUBING WHATEVER THE . . .

SHAPE Instruments, pens, pencils, screw machine stock, and metal shielded wire are but a few of the many products to which small seamless tubing has been applied. When your products require tubing, Precision accurately forms it into whatever shape you specify—round, rectangular, oval—ready for immediate use.

SIZE Precision Tubing is available in outside diameters of 0.500″ to 0.010″—wall thicknesses of 0.035″ to 0.0015″. Through continuous hydrogen atmosphere annealing furnaces and tungsten carbide tooling dimensions you specify within this range are held to extremely close tolerances.

ALLOY Whether it's an aluminum alloy used to acquire a finish suitable for color anodizing, an alloy for Bourdon gauges, nickel, monel, or any other non-ferrous alloy, Precision research subjects non-ferrous metals to rigid tests. These assure reliable operation even under extreme conditions. Controlled production cycles make possible a correct temper, a clean smooth finish, and the precise uniformity so essential to long life.

WHEN PRECISION COUNTS . . .
COUNT ON PRECISION

PRECISION TUBE CO.

SPECIALISTS IN ACCURATELY DRAWN TUBING AND METAL SHIELDED WIRE
Factory: 3824-26-28 TERRACE STREET · PHILADELPHIA 28, PA.
BRANCHES IN ALL PRINCIPAL CITIES

• **MORE ALLOY STEELS**—Nearly 7 million tons of alloy steels were made during the first 10 months of this year, according to the American Iron and Steel Institute. This is 909,000 tons more than was made during the corresponding period last year. In prewar years alloy steel output amounted to about 6 pct of total ingot and castings production. In averaging nearly 10 pct of total steel output this year, a new record has been attained.

• **MORE IMPORTANT**—Electric furnaces are playing more and more important a role in steelmaking each year. In addition to making alloy steels, these units are making more carbon steel of late. In making over 4 million tons of steel during the first 10 months of this year, electric furnaces made almost a million tons more steel than during the same period last year. Carbon steels accounted for almost ½ of this total output. Recently, electric furnace percentage operating rates have risen above openhearth rates.

• **F.O.B. HEDGE**—Maremont Automotive Products, Inc., Chicago's largest makers of replacement auto springs, have purchased the E. R. Merrill Spring Co. of New York City. Some consider this just another step in Maremont's broad expansion program. This is but partially true. What is more significant is that Maremont by this purchase protects their position in the market should f.o.b. mill price setup be here to stay.

• **WHAT'S THE PITCH**—From Nov. 8 through 18, representatives of industry and business were guests of national military establishments. About 32 men were taken on an orientation tour of military facilities at Fort Benning, Ga., Pensacola, Fla., and Elgin Field, Fla. At least a dozen times during the trip different guests asked the military officials, "what are you trying to sell us?" Each time the answer was—"nothing, we just want you to see what we have, what we can do with it and what some of our major problems are."

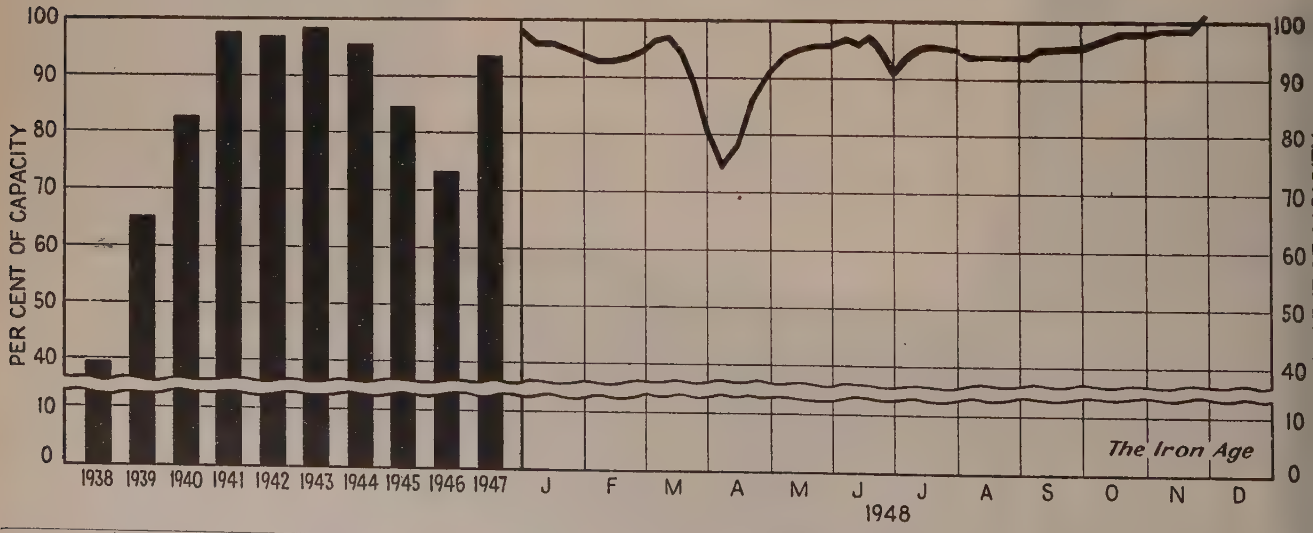
• **NOTHING COMPLICATED**—Kaiser-Frazer's recent purchase of the Phoenix Div. of Phoenix-Apollo has a lot of people puzzled. It's really very simple, K-F officials tell us. They were shipping pig iron from their blast furnaces at Phoenix in return for ingots in a regular barter deal. Now that the iron and steel supply problem h
been taken over by K-F, they merely supply Apollo w
sheet bars. The balance of the ingot tonnage belongs
K-F and this tonnage is now applied to their regular co
version program. The whole operation is now much mo
simple and direct than was the first one.

• **A TOUGH NUT**—Maintenance and repair costs in t
steel industry have gone higher than ever before duri
war or peace, according to the American Iron and St
Institute. The estimated total for the last year was ov
$692 million, or 41.6 pct over the previous year. Sales pric
are determined by labor, cost of materials and maintenan
Increased maintenance cost in addition to the increas
costs connected with labor and materials have been
flected in recent base price and extra increases. Unle
these cost factors are halted, additional price increas
are inevitable.

• **ELECTRICAL SHEET EXTRAS**—Because so
buyers are becoming more exacting in their requiremen
for physical and electrical properties of silicon shee
Carnegie-Illinois has added seven specific test requireme
extras on its latest extra list, dated Nov. 22. Commerc
quality electrical sheets are normally sold to a guarante
core loss value only. Specific test requirement extras, a
price per 100 lb, are: permeability, 50¢; ductility, 25
tension testing, 25¢; Rockwell hardness, 10¢; space fact
25¢; resistivity, 25¢; and interlamination resistance, 2
Specification of several of these tests would add conside
ably to the price of electrical sheets. The inference is th
the steel company would just as soon not make the tes
—but if they are made they will be fully paid for.

• **THEY'LL STILL DO IT**—Men will still always flo
to where there's a quick buck to be made. A hundr
years ago gold drew them. Today they're after pitc
blende and uranium. Reports come from 150 mi Nor
of Sault Ste. Marie, Ont. of a third uranium strike. Hu
dreds of prospectors have been striking out claims in th
area, and in recent weeks hundreds more have board
trains and flocked to a territory that might lead them
riches. It's tough to beat the bigger guy, though. T
Jalore Mining Co. of Pittsburgh quietly filed 37 claims
the site of the second strike before anyone else got wi
of the new site.

Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggreg
Nov. 23........	100.5*	99.0*	94.0	98.0	103.0*	105.0	101.0	102.0	102.0	102.0	107.0	89.5*	112.0	100.
Nov. 30........	99.5	100.0	94.0	98.0	103.0	105.0	102.0	102.0	102.0	109.5	103.0	89.5	112.0	100.

* Revised.

Industrial News Summary

- ***Ingots to Reach 88.5 Million Tons***
- ***Finished Steel May Be 65.7 Million***
- ***Demand Shows No Declining Trends***

HIGHER steel output in the past several weeks means that the industry will turn out about 88,500,000 tons of steel ingots nis year. This is only a million tons less than he war year record made in 1944. Had it not een for the coal strike this year the industry ould have surpassed 90 million tons of ingots— goal which would have appeared fantastic 10 ears ago.

More important are new estimates for finished teel shipments this year. They will break all ecords in steel history. THE IRON AGE estimates hat more than 65,700,000 tons of finished steel ill be shipped to steel users this year. This is 8 pct more than the prewar year of 1939. And t is 4 pct more than was shipped in 1944 when nuch more steel ingots were made.

The new record is being made in finished steel hipments even though total steel ingot output s slightly lower than it was a few years ago. ore of the ingot is being processed than ever efore. That is why more finished steel is being nade per ton of ingots produced.

Barring a steel labor strike or a long coal wage mpasse, steel to be turned out next year may each more than 92 million tons. Output this veek is on an annual basis of 94 million tons. It s hardly likely that such a rate could be held inefinitely. But more capacity is being brought in. oal quality is better. Scrap is more plentiful— emporarily at least. And workers efficiency apears to be slightly better.

What will all this outpouring of steel do for he steel consumer? Right now it won't silence is yammering for more steel. As the months oll by next year the pitch of the yelling for steel hould be slightly lower. But a double barreled heck by IRON AGE field editors does not foretell year of plentiful steel in 1949.

F there were to be no large defense expenditures and if there were no probability of armng Western Europe it would be easy to say steel emand and supply would go a long way toward alance in 1949. But these "ifs" are too big.

A recheck of appliance manufacturers shows nat they are waiting breathlessly for Christmas ales reports. If their items move then they will e in the market for more and more steel. If ales of appliances fall off in the holiday season will mean that inventories will be closely atched, orders for steel may drop off, etc. All nis was said before, not once but two or three mes.

But the total steel supplies of the appliance industry would be gobbled up by others who are paying fancy prices to get steel converted into shortage items. Auto concerns this week are no less eager for steel than they were 6 months ago. Construction demand for next year will be greater than this year.

Over all steel markets hangs the fear that a fourth round of wage increases will hit steel. If it does there is no reason to believe that prices will not again advance to take care of increased labor costs.

Under such conditions as (1) defense steel potentials (2) possibility of rearming Western Europe (3) probability of another wage round (4) chance of higher steel prices following a wage round and (5) unpredictability of consumer demand and the need for vast maintenance and repair to American industry, people who buy steel would be hesitant to draw in their horns. They probably won't—yet.

The sore question of reduced quotas for the first quarter of 1949 is by no means clear-cut this week. Some steel firms claim that their customers will get the same amount of steel in the first quarter as they received in the final quarter of this year.

ONE company has slashed first quarter quotas by 10 to 15 pct. Other firms will not tell consumers what the first quarter quotas will be. At least one firm—fearful of voluntary allocations—will only tell customers on a monthly basis what their take will be. All this adds up to uncertainty for the first quarter.

The ingot rate this week is 100.5 pct of rated capacity. This is a new high in the industry. The rate this week means that steel firms are running everything that can be moved. Whether or not such a rate can be long sustained remains to be seen. But it is certain that close to maximum output will be held for some months to come. This should ease some of the more difficult cases of steel shortages.

The industry will probably run smack into some people who will want to know how the rate can be more than 100 pct of capacity. The present figure allows for repairs and shutdowns during the year. The industry could run more than 100 pct for a short period and less than 100 pct when and if certain steel furnaces were shut down for repairs. Over the full year, complete utilization of steel furnaces would average out 100 pct—if estimates of furnace output were correct.

Quantity

PRODUCTION

of

GREY IRON CASTINGS

*

ONE OF THE NATION'S
LARGEST AND MOST MODERN
PRODUCTION FOUNDRIES

*

ESTABLISHED 1866

THE WHELAND COMPANY

FOUNDRY DIVISION

MAIN OFFICE AND MANUFACTURING PLANTS
CHATTANOOGA 2, TENNESSEE

Power Curtailments May Doom Postwar Record Aluminum Output

Northwest Aluminum Plants Rationed In Favor Of Other Power Users

By JOHN ANTHONY
Eastern Regional Editor

New York

• • • **The production** of primary aluminum, reaching toward a new postwar high this year, received an important setback recently when the Bonneville Power Administration curtails power distribution to all producers above the irm power contract minimum. Reynolds Metals Co. has suffered the loss of 9 pct of its power at Longview, Wash.

Two weeks ago the Vancouver, Wash. plant of the Aluminum Co. of America suffered the loss of 27,000 kva out of a maximum potential loss of 42,000 kva permissible under a power contract renewal last April. The company estimates that if the 27,000 kva loss is continued for a full year it will involve the loss of aluminum production to the equivalent of 85 to 90 pct of one potline during that time.

Although officials are fearful that the remaining 15,000 kva may be lost at the time of contract renewal next April, those familiar with the critical Northwest power situation anticipate an even greater loss as BPA is said to be considering the further extension of the interruptable period to as much as 4 hours a day. This period represents the possibility of a further loss of power which has not yet been implemented.

The Bonneville power restriction is also applicable to the Reynolds Metals Co. plants at Troutdale, Ore. and Longview, Wash., and to the Kaiser Co. plant at Spokane. Kaiser's Tacoma plant will not be affected. The power restriction affects annual reduction capacity of 210 million lb for Kaiser, 00 million for Reynolds and 165 million for Alcoa.

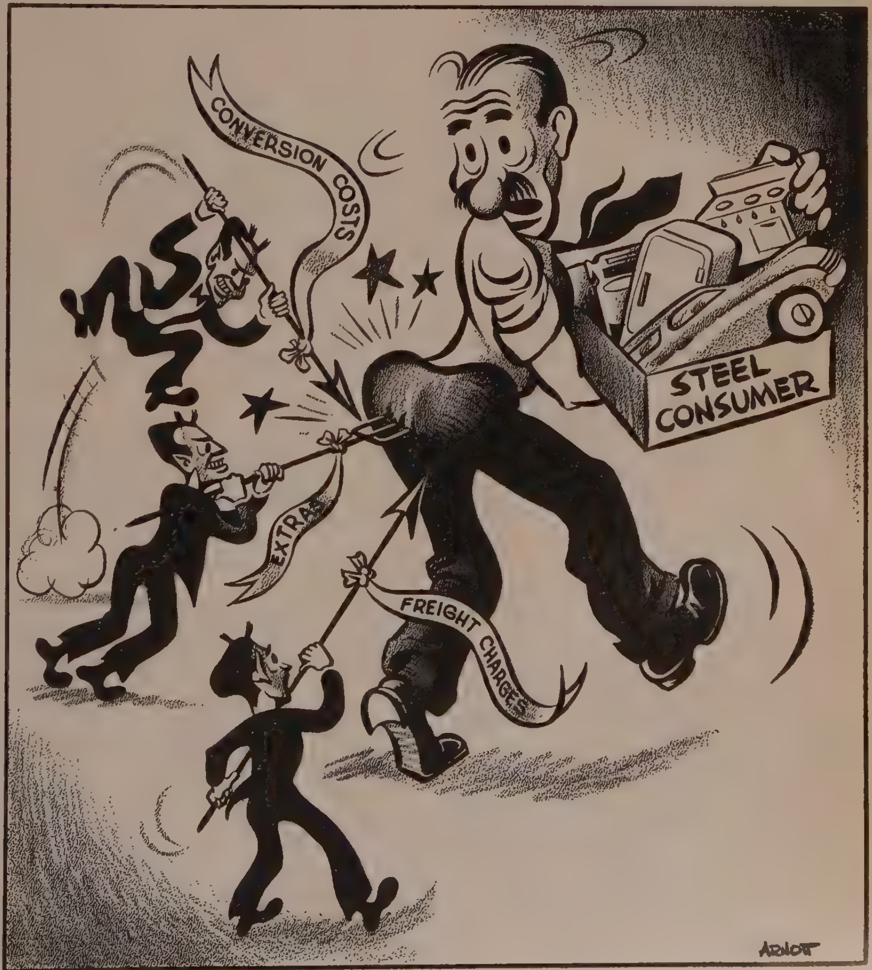
It has been estimated that if power were to be withdrawn from ll Northwest aluminum producers or the full two hour period each ay there would be a total daily oss of 23,000 lb of primary ingot ut of a maximum daily capacity n that area of 1.6 million lb.

Producers will also suffer important losses, in addition to the growing dissatisfaction of the inustry's customers, due to coninued idleness of new mills for lack of metal. Alcoa's big $50 million sheet mill at Davenport, Iowa with a capacity of 120 million lb a year has not yet been put into production. Scheduled for completion last March, the metal shortage made it unnecessary to rush construction and installation of equipment, but now the plant is virtually completed and without any prospect of being able to operate.

Curtailment of power for Northwest aluminum production is due to the basic principle underlying the distribution of government financed power as set forth in the National Power Act. Under this regulation priority must be given by public power agencies to municipalities and cooperatives (public utility districts). This gives precedence in power distribution to home and farm consumers at the expense of heavy industrial users.

Both producers and consumers of aluminum are seriously questioning the advisability of granting a power priority to what might be considered the least essential users at a time of rearmament and European cooperation. It has been estimated by some in the industry

Quick Watson—The Iron Pants!



that the restriction of power will cut seriously into first quarter shipments of fabricated products to the extent that there may be a reduction of shipments of mill products by 20 to 25 pct as compared with the comparable period of 1948.

The heavy growth of population and industry in the Northwest in the last decade has built up home and industrial demand for Bonneville power well above the present capacity. Aluminum reduction plants are notoriously low employers of manpower per unit of power consumption. As the result of this situation there is considerable pressure in the area to make use of available power to serve the higher manpower employing industries. Aluminum producers, confronted with power limitation in the face of heavy consumer demand, hark back ruefully to the early days of Bonneville power when they were welcomed to the area with open arms as the salvation of BPA's sales problem.

Aluminum producers have equally pressing power problems in other areas of the country. The situation was highlighted by Alcoa's recent purchase of the government facilities at Massena, N. Y. The government plant contains three potlines and it has been widely assumed by consumers that the acquisition of the government plant would necessarily build up Alcoa's production. However, the shortage of power will not permit the operation of all six potlines at both Massena plants.

Present plans of the company contemplate the retirement of two potlines in the Alcoa plant coupled with the activation of two potlines of the government plant. There should be a net increase in tonnage at Massena of only 4 pct. But there will be a net loss of ingot production in New York state next year as the result of the closing down of the obsolescent Niagara Falls plant.

Production of primary aluminum this year has been doing well considering the power shortage. Production for the first three quarters of 1948 was 465,000 short tons which would have represented a postwar high for the year if not curtailed by power restriction in the last quarter. Nevertheless, it would have represented only 50 pct of peak wartime production of 920,000 tons.

Canada's Defense Minister Keynotes Big Stockpiling and Rearmament Program

Ottawa

• • • **Canada's Defense** Minister Brooke Claxton revealed that Canadian military authorities have launched an intensive inventory to determine the equipment and material which this country's fighting forces would need for a year of war. The inventory is preliminary to a stock-piling of the needed war materials to be carried out as rapidly as circumstances of raw materials. manpower and plant facilities will permit.

Mr. Claxton pointed out that an important start already had been made upon translating the nation's preparedness program from the stage of blueprints to the accumulation of the actual sinews of war. He gave the following partial catalogue of steps that have already been taken:

(1) Creation of a defense commitments authority—an entirely new and unprecedented government agency whose function is to enable the military authorities to enter without delay into future contracts for material and equipment which otherwise would have to wait for parliamentary approval next mid-winter. Already contracts in excess of $29 million have been placed by this agency.

(2) Purchase of service planes from the United Kingdom and the United States at a cost of $7 million.

(3) Purchase of new North Star planes—still aviation's last word in long distance heavy duty aircraft—at a cost of more than $18 million in recent months.

(4) Awarding of a contract for refitting and modernizing 209 RCAF service planes at an estimated cost of $10,377,000.

(5) Expenditure of more than $6 million on jet engine research and experimental construction.

(6) Large scale orders for new motorized equipment for the army and for the overhauling and modernization of existing equipment.

An immense phase of the preparedness program will be directed toward the needs of the navy. Extensive contracts for ships, involving new types of vessels such a anti-submarine craft which hav had no place in Canada's naval establishment in the past, are sai to be in preparation.

Mr. Claxton pointed out tha consideration of neither traditiona parliamentary practice nor pas military policy are being allowe to block the way of speed an effectiveness of present action.

At the last session of the Hous of Commons, defense departmen estimates totalling $250 million—ten times the prewar figure—wer authorized. They were expected t give the defense authorities all th scope they would need. If Canad is to play her part in the threatening international situation and i the resulting Western Europea security program greater expenditure than the $250 million budge would have to be incurred, Mr Claxton indicated.

Strong Demand Persists For Expanded Steel Pipe

Los Angeles

• • • **Marking the completion** o its second year in a new field fo the West, Consolidated Wester Steel Corp. now has a backlog o contracts indicating a large demand for expanded steel pipe i this area.

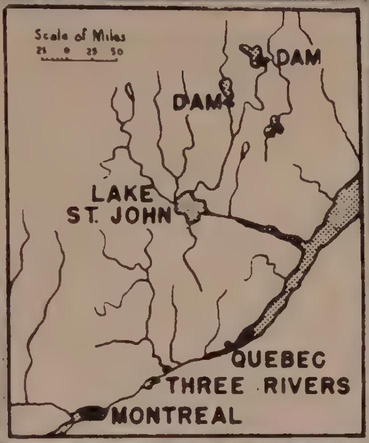
Before the entrance of Consolidated Western into the field i 1946 most of the expanded stee pipe was made by the A. O. Smit Corp. in Milwaukee. The Wes Coast debut in the field cam as the Southern California an Southern Counties Gas companie planned for a Texas to Californi line to bring more natural ga west to satisfy the needs of expanded population. They aske Consolidated Western to fabricat for them.

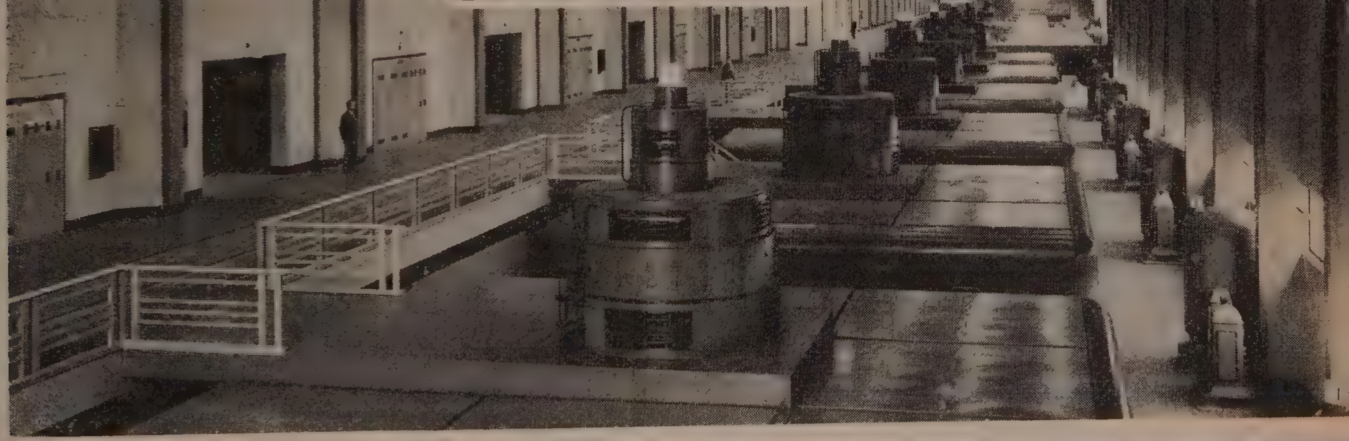
In the construction of high-tes expanded steel pipe, Consolidate Western now uses more than 200 000 tons of steel sheets or plate annually at its Maywood plan near here. With a capacity i excess of 20,000 tons a month, th amount could be increased if mor steel were available.

Canadian Aluminum Plant Enables Country to Become Third in World Trade

RIGHT

• *The Arvida aluminum plant located in the Saguenay district of Quebec is claimed to be the largest individual producer of aluminum in the world. Abundant supply of water power has permitted Arvida to become a center of flourishing industry and grow into one of Canada's model communities.*





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ABOVE

• *Interior view of the modern Shipshaw power plant on the Saguenay River showing the dynamos which develop 1,740,000 hp of electricity daily for the aluminum plant at Arvida.*

RIGHT

• *Circular moulding machines have increased the production of aluminum ingots at Arvida. Output is approximately 1000 tons daily. Industrial development such as this has enabled Canada to become the third trading nation of the world.*

o o o

Industrial Briefs . . .

• **Consulting Service**—Dr. Max Kronenberg has established a consulting service and opened an office at 15 East Eighth St., Cincinnati, after being associated with the Research Dept. of the Cincinnati Milling Machine Co. for the past 12 years. He will specialize in machine tools, production methods and metalworking research.

• **Plant For Sale**—The last large general purpose war surplus manufacturing plant in Chicago is being offered for sale by WAA subject to a lease expiring Dec. 14, 1950. The property includes approximately 50 acres of land. Bids will be accepted until Dec. 7.

• **Changes Name**—Columbia Radiator Co., McKeesport, Pa., has announced the change of its corporate name to Columbia Foundry Co. It has also announced its intention to withdraw entirely from the heating, boiler and radiator business and devote its entire facilites to the manufacture of production gray iron castings.

• **Western Office**—The Metalwash Machinery Corp., Irvington, N. J., has opened a new western office located at 1130 West Olympic Blvd., Los Angeles. J. Sigmund Berlie will be in charge of this office.

• **Elects Officers**—Leo H. Dragat of H. Dragat & Sons Inc., Hartford, was elected president of the Southern New England chapter of the Institute of Scrap Iron & Steel Inc. Robert Jacob of Jacob Bros. Inc., Bridgeport, was elected first vice-president, while Charles O. McIntosh of West Hartford, Conn., was named secretary-treasurer.

• **Service Warehouse**—The Billings & Spencer Co., Hartford, makers of drop forged wrenches and shop tools have established an emergency service warehouse in Chicago at 100 South Jefferson St. This emergency service is available only to Billings stock carrying distributors.

• **Representative**—The Midvale Co., Nicetown, Philadelphia, Pa., has appointed the John C. Riley Co., 407 Scanlan Bldg., Houston, as its district sales representative in the states of Louisiana, Arkansas, Oklahoma and Texas.

• **Branch Office**—The Machinery Div. of Dravo Corp., Pittsburgh, has opened a branch office in Baltimore. C. P. Cryer has been placed in charge of the new office. The Baltimore office represents De Laval Steam Turbine Co., Askania Regulator Co. and Davis Engineering Co., in addition to Dravo products.

• **Consultants**—Ivan Bloch has organized a group of industrial consultants which will operate as Ivan Bloch and Associates with offices in the Park Bldg., Portland, Ore., to serve industrialists established, or seeking to locate in the Pacific Northwest.

• **Alloy Agent**—Cerro de Pasco Copper Corp., New York, has appointed Peck Steel & Die Supply, 4436 Long Beach Ave., Los Angeles, as their West Coast distributor of Cerro low-temperature-melting alloys.

• **Tool Distributor**—The Garrett Supply Co., 3844 South Santa Fe Ave., Los Angeles, has been appointed distributor in the Los Angeles area for the Butterfield Div., Union Twist Drill Co., Derby Line, Vt., manufacturers of industrial cutting tools.

• **Change of Address**—Thomas J. Llewelyn, machinery dealer, has announced a change in the name of his company to Llewelyn Associates and the moving of the company offices to 944 Oliver Bldg., Pittsburgh.

Stainless Discount To Distributors Weighed In Face of Complain

Cleveland

• • • **Restoration** "in the near f
ture" of some sort of function
discount to stainless steel distri
utors on shipments for stock by
least one major producer of stai
less products was predicted he
this week by trade sources.

Elimination of the 10 pct di
tributors discount Oct. 1 produc
a rhubarb in the trade which h
had rather severe repercussions
mill level. Distributors have be
selling out their inventories
some items canceling orders at t
mill, and in general paring the
stainless steel sales activities
a minimum.

Some of the smaller produce
have not dropped the discount
distributors and in such cases, i
ventories are being carried a
business is as usual, but where t
major producers are involve
shipping direct at 5 pct discou
and for stock at no discount, e
pecting distributors to make th
profit from the quantity differe
tials, considerable turmoil has r
sulted.

Under the present mill sal
policy, warehouses report they a
financially unable to carry a l
or slow moving inventory of stai
less steel products and make c
on the quantity differentials.

A sales manager of one wa
house put the situation this wa
"Suppose we ordered 5000 lb o
stainless product. We believe
should be able to sell the 5000
at one time with a profit, but un
the present mill sales policy,
cannot do it. Our profit must co
from the quantity differentia
which are not great enough
cover our sales costs and still g
us a reasonable profit.

"Customers can go to the m
and get the same price they
from us. Therefore why should
tie up our money in inventory
an incommensurate profit, or
profit at all to ourselves, just
the mills' benefit?"

Some warehouses have been
the process of cutting stainless
ventories to the bone, retain
only those items on which the f
mer discount still applies, and
which there is an established
historical demand by customer

ŧt. Lawrence Seaway Now Boosted by M. A. Hanna Co. in Reversal

Formerly Opposed to Project Because of Foreign Competition

° ° °

By BILL LLOYD
Cleveland Regional Editor

° ° °

leveland

• • **Proponents** of the St. Lawence Seaway project gained a owerful ally last week from the anks of their adversaries when . A. Hanna Co., one of the vital egments of the Great Lakes steel dustry, took a stand in favor of e waterway.

Hanna's backing of the Seaway roject hit some Great Lakes coal, re and vessel operators with conderable impact, but not surprise, r the move has been in the makg for more than a year, probably nce the potential proportions of e Labrador iron ore deposits in hich Hanna has an important inrest were revealed by exploraory drilling.

Excerpts of letters written by eorge M. Humphrey, Hanna Co. resident, to United States Senars Robert A. Taft and John W. ricker, as well as Ohio congressen, urging them to give "this enre subject thoughtful review," ere made public here.

In the letters Mr. Humphrey realled that his company had been ctive in opposing the St. Lawence Waterway for a number of ears because they believed there as not sufficient tonnage to move er it that would be of benefit to e Midwest. But he pointed out at new facts have developed hich entirely change their viewint.

He cited explorations in the past w years which "have now defitely proved that large tonnages high grade iron ore now exist Quebec and Labrador." It was ggested that these could be most neficial for use in the steel ants of the Midwest if access to em is provided by direct, cheap ater transportation. This, added declining domestic ore reserves, as given as the reason for changg position.

Granted the Seaway, Mr. Humrey said the Canadian ore would me by rail to the Gulf of St. wrence and then 1012 miles to eveland by water. This compares th approximately 835 miles by ater from Duluth to Cleveland, as our Lake Superior ores now move.

He indicated that his company still opposed the project solely as a power development, but that they strongly favored it, provided power development were limited to "economic justification."

R. L. Ireland, Hanna Co. vice-president, in a letter to associates still opposing the Seaway project, attached a copy of another letter written by Mr. Humphrey, outlining Hanna's new position on the Seaway project.

George M. Humphrey

This letter suggested indirectly that without the Seaway, Labrador ore, when available, might move to Atlantic seaboard plants rather than to the Great Lakes steel industry.

As a coal man, Mr. Humphrey had based his opposition to the project on three points: (1) the importation of competitive fuel, (2) the loss of coal business resulting from a decline in manufacturing by virtue of competitive manufactured imports, (3) the loss of potential coal business through the construction of the hydro-electric facilities.

But now he sees: (1) danger of coal importation today is negligible, (2) the demand for power today "far exceeds our most optimistic estimates of a few years ago," (the present steam electric program offers the coal industry opportunity for plenty of expansion). Thus, the necessity for protecting a declining market no longer exists. (3) The development of such hydro electric plants in connection with the Seaway, as are economically justifiable, will bring further industrial development. Mr. Humphrey said that this last point had only recently become apparent to him in observing the Ontario Hydro Commission and the Niagara Hudson Electric Co. developments.

Ore, coal and vessel operators here, including Lake Carriers' Assn., whose members are the most important lake shippers, declined to comment on the Seaway project or Hanna's action. LCA's past opposition to the Seaway was centered on the proposal of tolls to make the project self-liquidating. A committee of association members has been appointed to study any new legislation which may come before Congress, but presumably elimination of tolls would not change materially LCA's position.

In the past, one of the chief and most powerful opponents of the Seaway project has been Cleveland-Cliffs Iron Co. A. C. Brown, Cliffs president, declined to comment on the Seaway project at this time.

However, about 18 months ago Mr. Brown, testifying before the Senate Foreign Relations subcommittee stated that construction of the waterway would delay installation of beneficiation equipment in the Lake Superior district. At that time he further testified that it would not take many millions of tons of iron ore produced by cheap labor and transported in foreign ships to seriously disturb market conditions for Lake Superior iron ore. He added that the uncertainty that the St. Lawrence project would inject into the iron ore situation would tend to delay the taconite program.

Kaiser-Frazer Corp. Plans Low Priced Car for 1950

Chicago

• • • **Before the** American Finance Conference annual convention held here recently, Henry J. Kaiser said that Kaiser-Frazer Corp. expects to introduce its low priced car in 1950. The president of Kaiser-Frazer said that the company intends to introduce four additional new models in 1949. He added that the corporation will only consider the low priced car if the steel supply situation in 1950 permits.

Mr. Kaiser said that the outlook is not bright for additional steel for automotive production next year. He predicted that four million passenger cars and more than one million trucks and coaches will be built this year, second best year in the industry's history.

In his address to the convention he advocated a readjustment of government tax policies in order to provide taxpayers with more incentive for investing funds in business. He declared that the public is not investing sufficient funds through stock markets to supply capital required to keep the nation's factories and businesses growing.

Tucker Says He Has Steel For Production of Autos

Washington

• • • **Although steel** might cost as much as $10 a ton above the going price, sufficient sources have been lined up to assure continued production of the long-awaited Tucker automobile in quantity.

In the meantime, the Tucker Corp. has asked the Reconstruction Finance Corp. for a $30 million loan in order to get the assembly line rolling.

This report was given out here last week by Preston T. Tucker, president. He added that he is also attempting to form a syndicate by which the corporation hopes to raise $10 million in new capital.

However, he said, these moves were not to be taken as indication that the corporation was broke. Current assets of the firm were listed as about $8.7 million, including $3.1 million in materials and inventories and about $1 million in cash and treasury bonds.

About 60 to 70 Tucker cars have been produced as test cars and demonstrators and another 100 are on the assembly line. If the new money is obtained, it was said, a production rate of 1000 a day is envisioned within a year or a little more.

Coming Events

Nov. 28-Dec. 3 **American Society of Mechanical Engineers**, annual meeting, New York.
Nov. 29-Dec. 4 **National Exposition of Power & Mechanical Engineering**, New York.
Dec. 2-4 **Society for Experimental Stress Analysis**, annual meeting, New York.
Dec. 2-4 **American Institute of Mining & Metallurgical Engineers**, annual electric furnace steel conference, Pittsburgh.
Dec. 2-4 **American Metallizing Contractors Assn.**, annual meeting, Tulsa, Okla.
Dec. 3 **Magnesium Assn. and Mellon Institute**, magnesium meeting, Pittsburgh.
Dec. 6-8 **Electric Welding Conference**, Detroit.

1949

Jan. 10-14 **Society of Automotive Engineers**, annual meeting, Detroit.
Jan. 10-14 **Material Handling Institute and American Society of Mechanical Engineers**, Materials Handling Show, Philadelphia.
Jan. 14 **Malleable Founders' Society**, semiannual meeting, Cleveland.
Jan. 24-28 **American Society of Heating & Ventilating Engineers**, annual meeting, Chicago.

Big Spending Increase Shown in Third Quarte

Washington

• • • **Government spending,** pe
sonal expenditures, and buying
capital goods by business a
showed a continued rise durin
the third quarter, according to th
Dept. of Commerce's quarterl
survey.

As a result, the gross nation
product, which represents th
market value of the nation's ou
put of goods and services, no
stands at the annual rate of $25
billion.

Government spending rose by
billion to an annual rate of $
billion, resulting to a large exte
from the accelerated foreign a
program.

Private domestic investmen
which includes new constructio
inventories and purchases
equipment, rose slightly to brin
the third quarter rate to about $
billion.

Personal income rose to a hig
rate of about $214 billion; afte
deduction of taxes and saving
the personal spending rate fo
consumption stood at $179 billio
—an increase of $2 billion ove
the second quarter.

Power Shortages Plague Several Canadian Plant

Toronto

• • • **Electric power** shortag
are beginning to have serious e
fect on Canadian industrial activ
ties. Already plants in Ontar
and Quebec have been forced
curb operations.

At Arvida, Quebec, low wate
resulting in power shortage, ha
forced Aluminum Co. of Canad
to shut down one of three lin
of pots which have been in stea
operation. In all there are fo
lines of pots but one was clos
down soon after the end of th
war.

Fabricating plants in Ontar
have had their power supply cu
There is little prospect of any i
provement in the power situati
before next spring.

As a result of reduced produ
tion and increased demand, it
understood that Aluminum Co.
Canada will allocate its output.

idwestern Scrap Metal Drive Yields 12,000 Tons in 3 Weeks

AVCO Mfg. Corp. Sponsored A 4-State Effort to Seek Farmer Scrap Supply

° ° °

By STEVE SMOKE
Associate Editor

° ° °

ncinnati

• • **A bunch of kids** here in Ohio, diana, Kentucky, and West Vir- nia went around picking up junk om Nov. 4 to 24. They had a lot fun, assembled some 12,000 tons scrap and picked up almost 00,000 doing it. Not bad, but at's not where it ends.

This scrap will end up in our eel mills. They will use it to elt somewhere around 240 heats steel which in turn will result about 24,000 tons of ingots. hen, figuring a 70 pct yield, steel arved consumers will get around ,000 tons of finished steel prod- ts that they never would have d except for the efforts of these ds.

So everybody gets in the act, d everybody profits from the idwestern Scrap Metal Drive onsored by radio station WLW the Crosley Broadcasting Corp., subsidiary of AVCO Mfg. Corp. re in Cincinnati.

This was no haphazard collec- n campaign. Plenty of work ent into it before a single old flat n was thrown on the pile. And rtainly a unique approach was ed in luring hidden scrap into e open.

First, trained WLW research d merchandising men canvassed e 4-state area interviewing rmers to determine how much rap, if any, they had laying ound their farms. Interviewing 2 farms showed that there was average of 1950 lb of scrap on) of these farms. From this sam- , this meant on a statistical sis that there was an average 822 lb of scrap metal per farm. w since there are 762,811 farms the area, the scrap potential ere would run around 300,000 s.

Next question was how to get the potential. WLW had an an- er and went to work. They icited the aid of already organ- d 4-H and Future Farmers of erica Clubs.

They set up collection centers. vided forms and report blanks keep track of contributors and ghts contributed. They stuck $15,000 into daily radio programs, newspaper advertisements, placards, sent stage talent to put on programs at collection centers and gave out $4600 in prizes.

Midwestern Scrap Metal Drive Prizes

(To the winning 4-H and FFA Club)
in each of 4 states

Prize	Award	Total
First	$100	$ 800
Second	75	600
Third	50	400
Fourth	25	200
Ten additional	10	1600
Best in area	500	1000
Total		$4600

The FFA was the more active organization. They collected most of the scrap, 7000 tons. And it was the Brazil, Ind. chapter that took the $100 chapter prize in addition to the $500 grand prize. Their contribution was 175 tons.

The 4-H Clubs were outshone as a group. Because top executives were reporting on this year's activities and planning the following year's, they were unable to devote as much time to the drive as they would have liked.

But the Busy Bakers, nine 4-H girls from Seymour, Ind. got away from their kitchen ovens long enough to turn on a little sex appeal and walk away with top honors all the way around. They not only dug up top tonnage in the drive, 267 tons, but also grabbed off $600 of the long green stuff with the short future.

Here's a breakdown of contributions by states:

State	Pct	Tons
Ohio	35	4200
Indiana	26	3120
West Va.	24	2880
Kentucky	15	1800
Total		12,000

Because the steel industry talks scrap in thousands of tons you

CHASING SCRAP: *Youngsters scoured the countrysides of the 4-state area picking up all the scrap metal they could get their hands on. Some of it came in bigger lumps such as shown here. But most of it included odds and ends. The total, however, was substantial—12,000 tons in all.*

Union County 4-H and FFA
SCRAP METAL DRIVE
CONTEST

might think at a glance that the drive was a flop. They got only 12,000 tons. But on the contrary. This is exceptional tonnage for a cooperative effort. This area covers 144,988 sq mi and 15,000 kids had only 3 weeks to go searching, lifting, lugging and hauling in their spare time. Yet they contributed an average of almost 1 ton apiece.

The 2 organizations did not compete against each other. Each was able to win a like amount in cash prizes. And in addition, over 90 pct of the farmers donating scrap accepted no money. So it all went into their kitties.

At the same time this drive was in progress, other important developments were taking place in the scrap field. The single purchasing corporation for expediting German scrap to this country was abandoned. Red tape stymied an attempt to set up a group similar to that which got Britain over a million tons of scrap from Germany while we were getting only 150,000 tons.

Seeing this plan going awry, Secretary of Commerce Sawyer appointed a committee of businessmen to promote a nationwide scrap metal drive. He hopes this group can come up with some sizable tonnages to keep our mills operating at 99.5 pct of capacity.

If they can do it—maybe they will find that the organized and novel method used by AVCO's Crosley Broadcasting Corp. in its Midwestern Scrap Metal Drive will serve as an excellent model of approach.

Chicago Survey Yields Inconclusive Results On Changes in Pricing

Chicago

• • • **A survey made** by the Chicago Assn. of Commerce and Industry concerning any changes in pricing practices as a result of the cement case decision and later basing decisions, produced inconclusive results. This is not exactly what was expected. It is felt in some quarters that the wording of the questions sent to the hundreds of metal consumers in this area was not too well chosen.

Wilfred Sykes, president of the association, said in the release of the information that the 252 industrial replies to the questionnaire were nearly evenly divided between those selling f.o.b. point of origin and those selling f.o.b. destination. In a page of comments which accompanied the results of the survey, the association called attention to "a diversity of practice and a diversity of attitude" among manufacturers. They quoted a recent study made by the Federal Reserve Bank of Chicago which calls attention to the statement that "the greatest single distinguishing characteristic is the Chicago area's unparalleled diversity rather than the prominence of a single type of manufacture, trade or service."

It appears that the questionnaire has accomplished nothing except reflect the present state of industry over this much discussed important but rather nebulous issue. In considering the replies received from Chicago business establishments Mr. Sykes said, "It is impossible to tell at this time
whether the variety of opinion e
pressed rose from the differen
in marketing and purchasi
problems confronting Chicago i
dustry or whether it results fro
the widespread confusion whi
exists as a result of the court's d
cisions involved."

Marshall Plan Shipments Lagging Authorizatio

Washington

• • • **Although a total** of $2.1 b
lion in Marshall Plan aid had be
authorized through Oct. 31 (s
months of operation), only $1
billion worth of industrial a
other commodities have actual
been shipped.

About 52 pct of the total h
been provided by the Unit
States, the Economic Cooperati
Administration says. Canada a
Newfoundland account for a
other 25 pct and participating n
tions, less than 10 pct.

Acquires Plant from WA

Cleveland

• • • **Eaton Manufacturing C**
has purchased a manufacturi
plant in Saginaw, Mich., fro
War Assets Administration f
approximately $750,000, accordi
to J. O. Eaton, chairman of t
board, Eaton Mfg. Co.

The 175,138 sq ft comprisi
this plant, which was previous
leased from the government a
operated by Eaton since Octob
1941, doubles the company-own
manufacturing facilities at
Saginaw Div. With the purcha
of the Saginaw plant Eaton n
owns a total of 2,650,560 sq ft
manufacturing space in Oh
Michigan and Wisconsin.

Blast Furnace Capacity and Production

In Net Tons

AMERICAN IRON AND STEEL INSTITUTE
350 Fifth Avenue, New York 1, N. Y.

OCTOBER - 1948
Month

	Number of companies	Annual blast furnace capacity	Production							
			Pig Iron		Ferro manganese and spiegel		Total			
									Percent of capaci	
			Current month	Year to date	Current Month	Year to date	Current month	Year to date	Current month	Yea to da
Distribution by Districts:										
Eastern	11	13,093,560	1,026,149	9,198,792	34,813	289,986	1,060,962	9,488,778	95.6	87.
Pittsburgh-Youngstown	17	25,588,120	2,096,904	x19,290,818	16,888	192,630	2,113,792	x19,483,448	97.5	91.
Cleveland-Detroit	6	6,495,000	555,577	4,987,355	-	-	555,577	4,987,355	100.9	92.
Chicago	7	14,700,290	1,155,055	10,239,861	-	10,190	1,155,055	10,250,051	92.7	83.
Southern	8	4,949,660	437,082	3,735,365	9,688	x 81,029	446,770	x 3,816,394	106.5	92.
Western	3	2,612,300	188,238	1,836,677	-	-	188,238	1,836,677	85.0	84.
Total	35	67,438,930	5,459,005	x49,288,868	61,389	x 573,835	5,520,394	x49,862,703	96.6	88.

Anti-Delivered-Price Campaign Seen Ignoring Economic Issues

Campaign Is Based On Theme That Antitrust Laws Are Under Strong Attack

○ ○ ○

By GEORGE BAKER

Washington Bureau

○ ○ ○

ashington

• • **Another clear tip** was opped on Capitol Hill this week to the kind of political strategy be brought into full play early xt year in the fight to outlaw rmanently all systems of basing ints and delivered prices.

Here it is in a nutshell (the eaker is Representative Wright atman, D., Texas, and next year's airman of the House Small usiness Committee):

"If Republicans had gained con- ol of Congress and the Presi- ncy, the antitrust laws would ve been repealed in 30 days and ganized greed would have been complete charge of the country. he Capehart subcommittee was t up as a springboard for that rpose."

Strong talk? Well, lots of mem- rs of Congress—including both emocrats and Republicans— ink so, too. The gist of the anti- livered-price campaign is sim- y this: Ignore the economic sues involved in the f.o.b. vs. livered price controversy and ncentrate instead on the theme at the whole issue is simply one throwing out the antitrust laws.

This strategy is becoming more parent every day. The main- ays in the legislative fight to rce mandatory f.o.b. selling on siness and industry are headed Mr. Patman; Walter B. Wooden, sociate general counsel of the ederal Trade Commission; Pro- ssor Frank Albert Fetter, of inceton University; and various sser lights in and out of the dministration.

These anti-f.o.b. forces realize at they possess a powerful eapon—the general public's athy toward intricate economic oblems and ignorance of the asons why delivered price sys- ms have been built up.

These men are therefor relying avily on a propaganda campaign signed to convince the public at the whole issue is solely and nply one of weakening the anti- st laws.

This kindergarten concept is least one the general public can understand. The proponents of f.o.b. pricing are telling each other that the man on the street can't understand freight absorption but he can understand terms like "a threat to the antitrust laws by the big monopolies."

They further feel that if they repeat this chorus over and over again while delivered price legislation is pending in Congress, they will be successful in defeating any such legislation. At any rate, the battle is on. It will be a long one, and a tough one, and for the reasons stated above, cannot be won easily.

Professor Fetter, at the urging of Mr. Patman, has already denounced all current proposals to make every mill a base and all other proposals to legalize delivered price systems in his testimony before the House Small Business Committee. The guru of f.o.b. pricing disciples, when asked if he had expressed his views before Senator Capehart's Trade Policies Committee, declared that he didn't care to waste his efforts on the Capehart Committee. "I'll hold my fire if, and until, any bill comes out of the Capehart subcommittee," he promised.

Meanwhile, Mr. Patman has renewed his attack on the steel industry and on Senator Capehart with the charge that the "big steel companies" have "launched a vast propaganda campaign designed to create the impression that it was not the big firms, but rather small business, which would suffer as a result of the Supreme Court decision" (in the Cement Case).

Congressman Patman's six specific charges may also serve as a basic primer of his team's order of battle. Here are his charges:

(1)—"The formation of the Capehart subcommittee was inspired by the big steel and cement interests immediately following the decision by the Supreme Court which found that the cement industry had been engaged in a price-fixing conspiracy.

(2)—"The Capehart subcommittee has established an advisory council which is composed largely of big business interests and is stacked against the government and the people.

(3)—"The Capehart subcommittee has tried to divert public attention away from the obvious fact that the decision of the Supreme Court in the Cement Case was essentially a decision against conspiracies—conspiracies to fix prices in violation of the law.

(4)—"The Capehart subcommittee has tried to create the general impression that the recent price increases made by the steel companies were only the inevitable result of their compliance with the Supreme Court decision; whereas as a matter of fact, these price increases were made arbitrarily by the steel companies and had nothing to do with the Supreme Court's decision.

(5)—"The Capehart subcommittee has completely ignored Section 2 of the resolution establishing it—the section which authorizes the subcommittee to make an investigation into the broad problem of economic concentration—and that instead, it has confined its attention entirely to Section 1 of the resolution which relates to just one aspect of the monopoly problem—the basing point matter.

(6)—"The Capehart subcommittee has studiously ignored the clear warning by Arthur M. Hill, chairman of the National Security Resources Board, that the restoration of the basing point system would prevent the decentralization of productive facilities and would thus be harmful to national defense."

Biggest Percentage Capacity Gain in Philadelphia District

By THE IRON AGE Editors

New York

• • • **Steel capacity dropped** 1,271,820 tons since 1945 to 94,233,460 tons as of Jan. 1, 1948. This compares with previously rated capacities of 77,852,000 tons for 1936; 82,282,000 tons for 1938 and 95,505,280 tons for 1945.

Most important factor in capacity decline since the end of the war was taking wornout and obsolete furnaces out of service. This decrease comes despite extensive installation of new melting facilities by many companies. Generally, when new furnaces are constructed, a comparable number of old furnaces are knocked off. In several cases, however, new furnaces meant additional capacity.

THE IRON AGE presents a revised breakdown of stee capacity figures by districts as used in compiling it weekly ingot operating rate. These districts diffe from other sources in that they include a smaller are and are therefore more clearly defined.

Biggest capacity increase took place in THE IRON AGE'S Philadelphia district, largely through substantial furnace additions by the Bethlehem Steel Co. a its Sparrows Point, Bethlehem and Steelton plants.

Largest decrease in capacity occurred in the Pittsburgh area, primarily as a result of furnaces bein removed from service at Carnegie Illinois' Duquesn and Edgar Thomson plants.

Steel Ingot Capacity by Districts

DISTRICT—COMPANY	Rated Annual Capacity—Net Tons		
	1948	1945	1936
PITTSBURGH			
Allegheny Ludlum Steel Co.	430,860	394,860	523,040
American Locomotive Co.	103,000	103,000	103,040
Armco Steel Corp.	432,000	591,000	649,600
American Steel & Wire Co.	842,000	842,000	702,240
Babcock & Wilcox Tube Co.	50,400	50,400	....
Bethlehem Steel Co.	1,900,000	1,900,000	1,367,600
Braeborn Alloy Steel Corp.	20,730	20,730	5,645
Byers, A. M. Co.	150,000	150,000	....
Carnegie-Illinois Steel Corp.			
Clairton	805,000	805,000	504,000
Duquesne	1,742,800	2,146,800	1,904,000
Edgar Thomson	1,753,000	2,297,000	1,680,000
Homestead	4,279,000	4,732,000	3,136,000
Johnstown	24,400	24,400	....
Vandergrift	500,000	500,000	380,800
Total	9,104,200	10,552,200	7,604,800
Colonial Steel Co.	7,020	7,020	58,240
Crucible Steel Co.			
La Belle	....	3,780	23,330
Midland	997,950	1,034,400	672,000
Park	183,100	181,500	134,400
Total	1,181,050	1,219,680	829,730
Edgewater Steel Co.	140,170	140,170	84,000
Firth Sterling Steel & Carbide Corp	20,040	17,540	16,222
Heppenstall Steel Co.	46,580	42,560	42,560
Jessop Steel Co.	50,000	50,000	17,920
Jones & Laughlin Steel Corp.			
Aliquippa	1,764,000	1,764,000	1,822,880
Pittsburgh	2,137,500	2,233,500	2,476,320
Total	3,901,500	3,997,500	4,099,200
Latrobe Electric Steel Co.	12,000	12,000	13,440
Mesta Machine Co.	105,000	105,000	72,800
National Tube Co.	1,164,000	1,200,000	1,077,440
Pittsburgh Steel Co.	1,072,000	1,072,000	806,400
Union Electric Steel Corp.	21,000	25,200	10,080
Universal-Cyclops Steel Corp.	54,120	54,120	33,600
Vanadium Alloys Steel Co.	11,910	11,910	5,600
Vulcan Crucible Steel Co.	9,600	9,600	4,234
TOTAL Pittsburgh District	20,829,180	22,521,400	18,554,743
CHICAGO			
American Locomotive Co.	78,000	78,000	78,400
American Steel & Wire Co.	690,000	610,400	336,000
Carnegie-Illinois Steel Corp.			
Gary	5,718,800	5,718,800	5,855,360
South Works	4,525,000	4,525,000	4,874,240
Total	10,243,800	10,243,800	10,729,600
Columbia Tool Steel Co.	6,600	6,600	4,480
Continental Steel Corp.	364,000	364,000	313,600
Reconstruction Finance Corp.			
South Chicago	....	80,000	....
East Chicago	120,000	120,000	....
Total	120,000	200,000	....
Ingersoll Steel & Disc Div. (Borg-Warner Corp.)	24,000	24,000	14,757
Inland Steel Co.	3,400,000	3,400,000	2,620,800
International Harvester Co.	900,000	900,000	769,104
Joslyn Mfg. & Supply Co.	37,500	37,500	....
Northwestern Steel & Wire Co.	321,000	321,000	33,600
Republic Steel Co.	1,225,000	1,301,000	456,960
Youngstown Sheet & Tube Co.	1,446,000	1,446,000	1,064,000
TOTAL Chicago District	18,855,900	18,932,300	16,421,301
VALLEY (Youngstown)			
Barium Steel Corp.	50,000	50,000	11,2
Carnegie-Illinois Steel Corp.			
Youngstown	2,344,000	2,344,000	2,060,8
Copperweld Steel Co.	450,000	321,360	....
Empire Steel Corp.	369,730	348,540	343,2
Reconstruction Finance Corp.*	360,000	....	....
Republic Steel Co.			
Canton	775,000	1,445,000	1,179,3
Massillon	610,000	610,000	585,7
Warren	860,000	950,000	734,7
Youngstown	2,150,000	2,350,000	1,705,7
Total	3,395,000	5,355,000	4,205,6
Sharon Steel Corp.			
Farrell	1,000,000	1,050,000	896,0
Lowellville	572,000	636,000	504,0
Timken Steel & Tube Co.	547,200	547,200	336,0
Youngstown Sheet & Tube Co.			
Brier Hill	1,104,000	1,104,000	940,8
Campbell	1,452,000	1,452,000	1,489,6
Total	2,556,000	2,556,000	2,430,4
TOTAL Valley District	12,643,930	13,208,100	10,787,3
PHILADELPHIA			
Alan Wood Steel Co.	550,000	550,000	739,2
American Bridge Co. (Carnegie-Illinois)	....	....	268,8
Armco Steel Corp. (Rustless Iron & Steel Div.)	95,000	114,000	21,1
Baldwin Locomotive Works	149,300	169,930	123,9
Bethlehem Steel Co.			
Bethlehem	2,585,000	2,503,000	2,013,7
Sparrows Point	4,651,000	4,075,000	2,813,6
Steelton	886,000	740,000	709,6
Total	8,122,000	7,318,000	5,537,0
Carpenter Steel Co.	74,880	74,880	43,9
Central Iron & Steel Co.	288,000	336,000	336,0
Henry Disston & Sons, Inc.	25,000	25,000	13,4
Harrisburg Steel Corp.	100,750	100,750	86,8
Lukens Steel Co.	624,000	624,000	844,4
Midvale Co.	523,770	519,370	300,1
Newport News Shipbldg. & Drydock Co.	7,500	7,500	2,4
Old Dominion Iron & Steel Works (Lebanon Steel & Iron)	....	....	2,8
Phoenix-Apollo Steel Co.	231,400	231,400	231,6
J. A. Roebling's Sons Co.	253,000	253,000	212,8
U. S. Naval Gun Factory	....	....	2,0
Worth Steel Co.	460,000	460,000	423,3
TOTAL Philadelphia District	11,504,600	10,783,830	9,190,0
CLEVELAND			
Jones & Laughlin Steel Co. (Otis Steel Div.)	840,000	1,026,900	843,3
National Tube Co.	1,884,000	1,944,000	1,747,
Republic Steel Co.	1,500,000	1,570,000	1,480,
TOTAL Cleveland District	4,224,000	4,540,900	4,071,

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* Idle capacity formerly reported with Republic at Canton.

The Iron Age Districts Annual Steel Capacity

In Thousands of Net Tons

1948-1945-1936

Source: American Iron & Steel Institute Directory
Compliations by Districts: The Iron Age

District	1948		1945		1936	
	Net Tons	Pct of Total	Net Tons	Pct of Total	Net Tons	Pct of Total
Pittsburgh	20,829	22.10	22,521	23.58	18,555	23.83
Chicago	18,856	20.01	18,932	19.82	16,421	21.09
Youngstown	12,644	13.42	13,208	13.83	10,787	13.86
Philadelphia	11,505	12.21	10,784	11.29	9,190	11.80
Western	5,706	6.06	5,467	5.72	2,034	2.61
Buffalo	4,423	4.69	4,443	4.65	3,890	5.00
Cleveland	4,224	4.48	4,541	4.75	4,071	5.23
Southern	3,837	4.07	3,701	3.88	2,616	3.36
Wheeling	3,495	3.71	3,320	3.48	3,662	4.70
Detroit	3,473	3.69	3,190	3.34	2,234	2.87
South Ohio River	2,933	3.11	2,760	2.89	2,379	3.06
St. Louis	1,674	1.78	1,758	1.84	1,436	1.84
Eastern	634	0.67	879	.92	577	0.74
Total	94,233	100.00	95,503	100.00	77,852	100.00

DISTRICT—COMPANY	Rated Annual Capacity—Net Tons		
	1948	1945	1936
UFFALO			
Allegheny Ludlum Steel Co.			
Dunkirk	33,000	33,000	16,800
Tonawanda	4,500	4,500	....
Total	37,500	37,500	16,800
ethlehem Steel Corp.	3,120,000	3,120,000	2,649,025
Erie Forge Co.	80,000	80,000	22,960
Erie Forge & Steel Co.	128,950	128,950	76,875
National Forge & Ordnance Co.	25,000	25,000	11,200
Republic Steel Corp.	830,000	850,000	633,920
Simonds Saw & Steel Co.	21,600	21,600	11,200
olorado Fuel & Iron Corp. (Wickwire-Spencer Steel Div.)	180,000	180,000	168,000
TOTAL Buffalo District	4,423,050	4,448,575	3,589,980

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VHEELING			
Carnegie-Illinois Steel Corp.	....	....	672,000
Follansbee Brothers			
Follansbee	....	....	100,800
Toronto	136,080	126,000	123,200
Total	136,080	126,000	224,000
National Steel Corp.			
Weirton Steel Co.	1,950,000	1,850,000	1,478,400
Wheeling Steel Corp.			
Benwood	336,000	336,000	280,000
Steubenville	1,073,000	1,008,000	1,008,000
Total	1,409,000	1,344,000	1,288,000
TOTAL Wheeling District	3,495,080	3,320,000	3,662,400

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OUTHERN			
Atlantic Steel Co.	165,000	154,000	153,485
Case Co., J. I.	74,400	74,400	16,800
Connors Steel Co.	60,000	60,000	....
Knoxville Iron Co.	38,000	38,000	....
Republic Steel Co.	650,000	715,000	448,000
Tennessee, Coal Iron & R. R. Co.			
Ensley	1,568,000	1,568,000	1,075,200
Fairfield	1,282,000	1,092,000	922,880
Total	2,850,000	2,660,000	1,998,080
TOTAL Southern District	3,837,400	3,701,400	2,616,365

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T. LOUIS			
American Rolling Mill Co.			
Scullin	....	....	228,614
Sheffield Steel Corp.	426,000	426,000	260,288
Granite City Steel Co.	620,000	703,200	403,200
Keystone Steel & Wire Co.	302,400	302,400	264,580
Laclede Steel Co.	326,020	326,020	278,840
TOTAL St. Louis District	1,674,420	1,757,620	1,435,522

DISTRICT—COMPANY	Rated Annual Capacity—Net Tons		
	1948	1945	1936
EASTERN			
Allegheny Ludlum Steel Co.	25,000	25,000	25,760
American Steel & Wire Co.	250,000	280,000	212,800
Crucible Steel Co. of America			
Harrison	4,800	210,000	34,384
Syracuse	67,800	24,000	16,800
Halcomb	....	54,000	49,168
Total	72,600	288,000	100,352
Stanley Works	188,200	188,280	134,400
Washburn Wire Co.	60,000	60,000	57,120
Wickwire Brothers, Inc.	38,000	38,000	47,040
TOTAL Eastern District	633,880	879,280	577,472

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WESTERN			
Armco Steel Corp.			
Sands Springs	54,000	54,000	56,000
Houston	560,000	466,000	....
Total	614,000	520,000	56,000
Bethlehem Pacific Coast Steel Co.			
Los Angeles	213,000	117,000	95,200
San Francisco	235,000	235,000	173,600
Seattle	210,000	210,000	156,800
Total	658,000	562,000	425,600
Colorado Fuel & Iron Co.	1,272,000	1,272,000	991,245
Columbia Steel Co.			
Pittsburg	362,600	416,600	263,648
Torrance	208,200	211,000	196,000
Total	570,800	627,600	459,648
Geneva Steel Co.	1,283,400	1,283,400	....
Isaacson Iron Works	104,400	104,400	....
Judson Steel Corp.	76,500	76,500	71,971
Kaiser Co., Inc.	870,000	750,000	....
National Supply Co.	41,400	45,900	8,400
Northwest Steel Rolling Mills	32,400	32,400	16,800
Oregon Steel Mills	66,100	60,000	....
Pacific States Steel Corp.	94,500	88,820	....
Texas Steel Corp.	22,320	22,320	4,256
TOTAL Western District	5,705,820	5,466,790	2,033,920

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DETROIT			
Allegheny Ludlum Co.	3,000	3,000	....
Ford Motor Co.	1,115,100	967,420	604,800
Great Lakes Steel Corp.	2,100,000	2,050,000	1,545,600
Rotary Electric Steel Corp.	255,000	170,000	84,000
TOTAL Detroit District	3,473,100	3,190,420	2,234,400

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SOUTH OHIO RIVER			
Armco Steel Corp.			
Ashland	828,000	783,000	619,808
Middletown	972,000	948,000	815,360
Total	1,800,000	1,731,000	1,435,168
International Detrola Corp.	413,100	413,100	384,160
Portsmouth Steel Corp.	720,000	616,000	560,000
TOTAL South Ohio District	2,933,100	2,760,100	2,379,328

Construction Steel . . .

New York

The estimated total bookings of fabricated structural steel for the month of October, according to reports received by the American Institute of Steel Construction, Inc., were 160,736 tons, a decline of approximately 11 pct from the previous month. The average bookings for the first 10 months of the year are 165,342 tons or 22 pct greater than the average bookings for the same months of 1947.

Shipments for the month were reported at 159,092 tons, and for the 10 months amounted to 1,636,804 tons, as compared with 1,567,176 tons for the corresponding period of last year.

The backlog (tonnage available for future fabrication) for the next 4 months only, amounts to 669,092 tons.

Following is the complete tabulation of bookings and shipments:

ESTIMATED TOTAL TONNAGE FOR THE ENTIRE INDUSTRY

Contracts Closed	1948	1947	Avg. 1936-40
Jan.	160,634	104,973	107,578
Feb.	130,119	125,881	96,280
March	213,123	149,634	124,558
April	154,082	161,338	110,783
May	141,764	112,954	126,237
June	162,367	103,273	125,835
July	177,687*	153,540	152,481
Aug.	172,485*	146,382	113,135
Sept.	180,422*	134,630	137,982
Oct.	160,736	159,132	141,557
Totals	1,653,419	1,351,737	1,236,426

Shipments	1948	1947	Av 1936-
Jan.	146,363	140,650	92,5
Feb.	141,556	136,126	88,6
March	167,029	137,799	115,0
April	166,687	157,392	123,6
May	186,915	154,980	123,2
June	157,109	151,882	129,9
July	160,780*	169,911	127,4
Aug.	176,306*	157,952	136,3
Sept.	174,967*	164,345	137,2
Oct.	159,092	196,139	140,9
Totals	1,636,804	1,567,176	1,215,0
Tonnage available for fabrication within next 4 months	669,092	648,808	348,0

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* Revised

• • • Fabricated steel awards th week included the following:

2300 **Tons,** Gorgas, Ala., addition to stea plant for Alabama Power Co., to V ginia Bridge Co., Birmingham.
1450 **Tons,** Chicago, building for F. W. Wo worth through Turner Construction C to Bethlehem Steel Co., Bethlehem.
900 **Tons,** Chelsea, Mass., John Adams V erans Hospital through M. S. Kellih Co., Boston, to Bethlehem Steel C Bethlehem.
850 **Tons,** Michigan City, Ind., addition to t power house for Northern Indiana Pub Service Co., to Duffin Iron Co., Chicag
350 **Tons,** Lynn, Mass., power house f General Electric Co. through Stone Webster Engineering Corp., to Err Iron Works, Buffalo, N. Y.
300 **Tons,** Sandusky, Ohio, warehouse, Phil Corp., to Bethlehem Steel Co., In Bethlehem.
200 **Tons,** Chicago, building for the Advan Aluminum Casting Corp., to Reut Bros.
170 **Tons,** Lackawanna Co., Pa., bridge, P Dept. of Highways, to Pine Brook Ir Works, Scranton, Pa.
100 **Tons,** Buffalo, building for Erhart Mot Car Co., through Truckenbrod & Co. In to August Feine & Sons Co., Buffalo.

• • • Fabricated steel inquirie this week included the following

2000 **Tons,** Hastings, Minn., State highwa bridge over the Mississippi River.
1250 **Tons,** Dayton, Ohio, State highway brid section Mo-35-148, bids due Dec. 8.
463 **Tons,** Massillon, Ohio, Cherry Road vi duct through U. S. Engineers Office.
400 **Tons,** Lewistown, Pa., State hospital, d Jan. 4.
175 **Tons,** Embreeville, Pa., Acute administra tion building, kitchen, dining roo State hospital, due Dec. 12.
170 **Tons,** Chicago, Sherwood elementa school, Duffin Iron Co., low bidder.
100 **Tons,** Hershey, Pa., boiler house exte sion for Hershey Chocolate Co.

• • • Reinforcing bar awards th week included the following:

400 **Tons,** Philadelphia, school at 75th a Woodbine, to McCloskey & Co., Philade phia.

• • • Reinforcing bar inquirie this week included the following

750 **Tons,** Chicago, No. 8 Sanitary Distri Sewer contract, Kenny Construction C was low bidder but all bids have be thrown out.
325 **Tons,** Chicago, Princeton Street sewe Michael Pontarelli Construction Co., Ch cago, low bidder.
180 **Tons,** Chicago, Press and bindery buildi for Cuneo Press, abandoned because high cost, has been reactivated.
135 **Tons,** Roxbury, Mass., housing proj through M. S. Kelliher Co., Boston.
130 **Tons,** Hartford and Windsor Conn., 40 span rigid frame bridge, grading a drainage, processed gravel service roa M. A. Gammino Construction Co., Pro dence, low bidder.

• • • Plate inquiries this week i cluded the following:

12,000 **Tons,** Soap Lake Siphon, State of Was ington, Penstocks have been bid join by the Chicago Bridge & Iron Co. a the Consolidated Western Steel Co.

50 YEARS AGO

THE IRON AGE, *December 1, 1898*

- "With the restless force of a glacier, but with a rapidity which is only slightly appreciated, steel is now supplanting all forms of wrought iron. However, complaints continue to be heard among mechanics about hard spots, unsatisfactory behavior when galvanized, and rapid oxidation when exposed to the elements. But the end of this century, which is now near at hand, will see the end of wrought iron as a distinctive designation, except in the case of Swedish or some other high-priced iron specialty."

- **"The R. K. LeBlond Machine Tool Co., Cincinnati, have been incorporated with a capital stock of $50,000 by John and Daniel Hay, and Richard, John and Robert LeBlond."**

- "A new organization to be known as the Otis Elevator Co. will include 90 pct of the elevator manufacturing interests in the United States. The charter possesses some new features of interest as the company not only intends to make elevators but to maintain them as well, instead of following the customary practice of guarantees. This is a new departure in manufacturing companies and one which will be noted with interest. The charter itself is in advance of those of combinations and trusts in that it does not wholly put in the power of the board, the right to destroy the value of the holdings of stockholders."

- **"It is inspiring to the earnest engineer to feel that the actual workings of his mind and his inner and fundamental conception of the forces of nature, of materials and workmanship, will be shown in his works, as in a mirror. Roebling, Ericsson and Edison have worked in a glass house. Whichever way we turn we are met by a sense of marvelous changes, which have followed the advent of the engineer on the scene."**

- "The Mesta Machine Co. has been organized in Pittsburgh and has acquired the business and plants of the Robinson-Rea Mfg. Co. It will continue to market this brand of rolls and machinery."

ne Case for Congressional Action on Present Pricing Practices

Action Seen Necessary So That Businessmen Will Know What Is The Law

° ° °

By WILLIAM SIMON

° ° °

ıshington

• After 25 years of litigating
ious phases of delivered pric-
practices, the Federal Trade
nmission achieved success in
8 when the Supreme Court and
cuit Courts of Appeals affirmed
orders in the Cement Institute,
id Steel Conduit, and Pitts-
gh-Plus cases.

he decisions in these cases and
arguments advanced by the
nmission during those proceed-
s have enveloped in uncertain-
all pricing practices, in indus-
s where freight is a substan-
part of the delivered cost,
er than f.o.b. mill selling. Sub-
ntial numbers of businessmen
urge Congress to amend the
to permit uniform delivered
es, uniform zone prices, and
ght equalization or freight ab-
ption to meet competitors' low-
prices, when such systems are
ctised individually and not pur-
nt to a conspiracy or agree-
t.

is my purpose to point out to
here today the issues which
t be decided by Congress, with
ect to the validity of pricing
ctices. It is of the greatest im-
ance that the Congress and
people clearly understand the
e, for otherwise the proper an-
r to the problem may not be
hed.

the commission's pricing pol-
limited to conspiracy cases?
, there is no occasion for con-
by any one. Not only is the
mission opposed to all con-
ed prices, but the Congress is
I am certain will continue to
nalterably opposed to all price
g conspiracies, as are and will
the overwhelming majority of
American people. In fact, op-
tion to conspired price fixing
most as universal as opposition
in.

the commission's pricing pol-
imited to the question of who
the freight bill? If so, the
e is not of vital importance to
our American economy. Someone must always pay the cost of transportation, and it does not seem to be of controlling importance to our economy whether it is paid by the buyer or by the seller.

The real issue which we must face is: What will be the effect on our entire national economy of the Trade Commission's pricing policies? Will it be a beneficial or a harmful result? Will that pricing policy impair or will it promote our free enterprise American competitive industrial system?

It must certainly be agreed that we cannot afford to impair the economic structure of our country and endanger our competitive industrial system, except as a calculated risk to achieve economic gains which outweigh the foreseeable disadvantages. We must determine whether we can afford to impair the right of American businessmen to openly and freely compete with each other, when it appears that this can only be done through freight absorption or freight equalization.

For more than 25 years the Federal Trade Commission has opposed delivered pricing practices. In 1924 it entered an order against the subsidiaries of the U. S. Steel Corp., affirmed last month, that requires them to sell at f.o.b. mill prices.

In 1936 hearings were held before a Senate committee on the Wheeler Bill, which was expressly designed to outlaw uniform delivered prices and basing point systems. The present chairman of the Federal Trade Commission then testified in support of the bill and the commission urged that the bill be passed. But the Congress did not pass the bill.

At a later date, the commission supported a definition of the word "price" in the proposed Robinson-Patman Act which would have defined the term as meaning what the buyer pays, after deducting the cost of transportation. The Chief Justice of the U. S. Supreme Court later said that had Congress passed the bill in the form recommended by the commission, it would have outlawed all delivered price and basing point systems. The Congress refused to pass the bill until that definition of price was stricken.

In 1941 the Trade Commission urged the Temporary National Economic Committee to enact legislation outlawing all basing point systems. The commission then told Congress that for 20 years government experts had been fighting the basing point system and that f.o.b. mill pricing was essential for competition in the steel industry. Again the Congress declined to pass such legislation.

The validity of any pricing practice must be measured by the provisions of the Sherman Anti-Trust Act, the Federal Trade Commission Act, and the Robin-

Vital Importance

New York

• • • The question of pricing practices is a controversial one. No one has denied that. But someone has said, and someone else denied, almost everything else relating to the question. Yet all agree it is of vital importance to all.

That is why the Editors of THE IRON AGE have decided to print the complete remarks of William Simon, chief counsel, Senate Trade Policies Committee, before the National Conference of Business Paper Editors in Washington.

son-Patman amendment to the Clayton Act.

The Sherman Act outlaws all conspiracies in restraint of trade. This includes all price fixing conspiracies. It includes conspiracies to fix prices through the use of f.o.b. mill selling. To the extent that the commission's activities in the pricing field are confined to conspiracy cases, it required none of the other legislation previously referred to, for price fixing conspiracies have been illegal since the Sherman Act was passed in 1890.

The Trade Commission Act authorizes the commission to outlaw unfair methods of competition. The statute does not define that phrase and neither the court nor the commission has ever done so. In a statement of policy issued by the commission on Oct. 12, 1948, it advises that *knowing parallel conduct* is an unfair method of competition and illegal. The commission concludes that identical prices are collusive and illegal regardless of whether they result from conspiracy or from competition. The commission views similar prices resulting from competition as creating an economic result undistinguishable from similar prices resulting from conspiracy. But most businessmen deny that those practices are each equally iniquitous.

You will probably find that in any city many brands of chewing gum, cigarettes, gasoline, newspapers and many other similar products are sold at the same price. That similar pricing pattern may well result from the fact that the sellers assembled in a smoke filled hotel room and agreed to fix prices. But it may also result from the fact that the forces of competition do not permit one seller to charge more for his product than is charged by other sellers for similar products. The commission, however, views all "knowing parallelism" in pricing practices as unfair methods of competition and illegal, without respect to whether the parallelism results from conspiracy or competition.

Under this statute the commission says it may be legal for one seller to use a basing point system, or freight absorption practice, but that such practice becomes illegal if it is subsequently followed by his competitors.

If a newcomer to the business
world were to adopt a new, n
and unheard of pricing po
which violated no requiremen
the law, it would nevertheless
come illegal for him to use
pricing practice if a substa
number of his competitors d
mined that competition requ
them to follow the same pri
practice and they in fact did
And it would not only be ill
for those who subsequently ad
ed the practice, but it would
become illegal for the origin
of the practice.

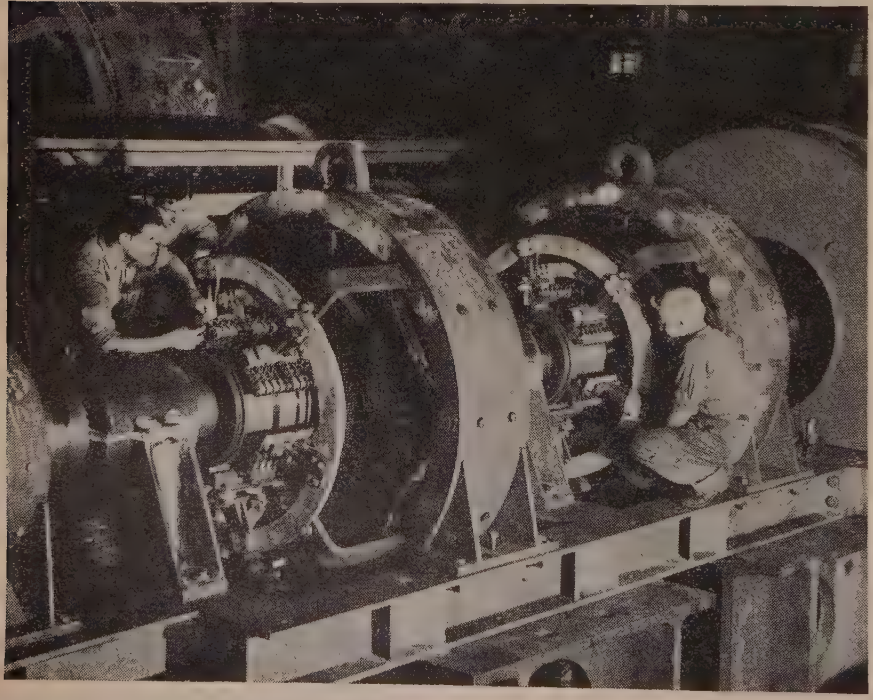
It has been argued that a
ufacturer cannot sell in dis
markets without maintainin
sales force in those distant
kets, and that a sales force
not be maintained without aut
izing salesmen to systematic
quote prices which are com
tive. But the commission v
salesmen as economic bootleg
Many economists feel there i
economic justification for a s
man.

Even if Gracie Allen can
Maxwell House coffee without
aid of salesmen, the small
comer to the grocery industry
not market an unknown bran
French dressing without sales

Some years ago a rather s
manufacturer told me that on
his salesmen made $50,000 to
000 a year. This was more
the owner of the business m
Thinking that was a good j
facetiously asked if he needed
more salesmen at that price.
unhesitatingly replied that he
that he would like a half d
salesmen that brought in en
business to earn that amoun
money.

The third statute by which
legality of any pricing pra
must be measured is the Robin
Patman Amendment to the
ton Act. The key to an u
standing of this act is the
mission's philosophy that p
as used in the Robinson-Pat
Act, means the seller's mill
return. It is the commission's
that a seller who sells the
product at the same deliv
price to two customers who
located at unequal distances
his plant, receives discrimina
varying mill net returns. A s
who sells at the same deliv

SHEETMILL POWERHOUSE: *This six unit motor generator which will be installed in Belgium's largest reverse cold rolling steel mill provides sufficient power to roll 18 miles of sheet in one hr. The set works through a system of amplidyne control and is driven by a 4000 hp synchronous motor.*



e to customers in a thousand erent towns to which there are ousand different freight rates a thousand different mill net rns. These varying mill net rns also result whenever a er absorbs freight on a sale distant customer in order to pete with a competitor whose it is located closer to the cus-er. Such varying mill net re-is are all discriminatory and are illegal whenever they injure competition.

the Morton Salt case, the Su-me Court held that an order he commission would be sus-ed if the commission found a onable possibility of injury ompetition.

he commission's complaint inst the cement industry rged a conspiracy to fix prices ugh the use of the basing t system. Its order found such onspiracy. But when the case hed the Supreme Court, the mission injected the mill net ry into the case. It then ed that the cement compa-" pricing policies resulted in al price discriminations irre-tive of conspiracy or agree-t. And its spokesman express-onceded that a nondiscrimina-pricing practice in that in-ry required uniform f.o.b. mill es.

he commission has long con-ed that a buyer close to the er's plant has an inherent eco-ic right to purchase at lower es than more distant competi-, because of his advantage of tion. But what about the sell-advantage of location? Is he e denied the right to exploit own advantage of location as ome of his customers and to to offset his disadvantage of tion as to other customers?

e commission's Oct. 12, 1948, ement of policy concludes that ally all pricing systems, other f.o.b. mill, are discrimina-and that they are illegal never those discriminations be found to injure competi-

t **the commission** expressly ds giving any yardstick by h the legality of any pricing em may be determined. Its osophy is that the commission be free to judge the legality ach case, on the individual

HOW FAST CAN YOU CHECK THIS FOR ROUGHNESS?

With the Profilometer, it's a matter of *seconds!*

This instrument has a tracing speed of 1/3″ or more per second —so a 10″ piece like the one illustrated can be measured *from end to end,* externally or internally, in less than half a minute. Similar speed is provided in measuring surfaces from 1/32″ up to *several feet* in length; and no technical knowledge or special skill is required.

Ease and speed of operation are two good reasons why hundreds of plants are using the Profilometer as standard shop equipment. Consistent accuracy is another. When the reading is taken, that's *it.* Any other operator will obtain the *same reading,* in *definite micro-inch units.*

And the Profilometer makes practical the advantages of *surface roughness control.* With this instrument, many plants are bringing their work more rapidly to final size and finish—often with fewer operations. They're shortening their set-up time. They're getting closer *dimensional* control—often detecting impending dimensional errors *before they occur.* In other ways, too, they are making big savings in time and material—savings which quickly repay the investment in equipment.

Write for complete information on the Profilometer and its many applications—and arrange for a demonstration in your plant. You may be surprised to learn how this and other PRCo shop instruments can help lower your break-even point.

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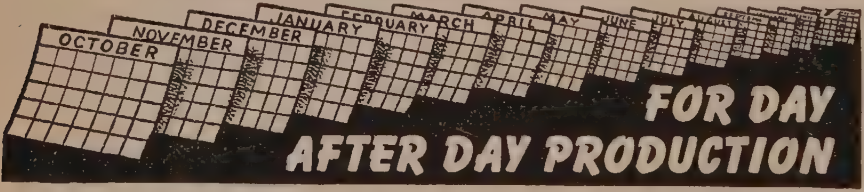

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MOLINE TOOL COMPANY
100 20th Street Moline, Illinois

facts in that case, after litigat
before the commission.

That statement of policy c
cedes that the legality of pric
systems is crucially affected
the idea of what constitutes
jury to competition through
criminatory varying mill
prices. But as to what is inj
to competition, the commiss
says that at one extreme th
would appear to be no injury
til substantial numbers of peo
had become bankrupt, and that,
the other extreme, injury to co
petition might be found in
case in which there was a pr
difference, no matter how ins
nificant, between competing c
tomers. The commission does
indicate at which of those
tremes or at what point betw
them it will fix the existence
injury to competition.

Thus at a maximum, f.o.b.
selling is required in virtua
every American industry, and
a minimum a seller can ne
know in advance of litigation w
the commission whether any p
ing practice, other than f.o.b.
selling, is legal. It thus see
clear that any seller, in an ind
try where freight is a substan
part of the delivered cost,
only sell with assurance that
pricing system is legal if he
ploys a uniform f.o.b. mill pr

At the public hearings of
Senate Trade Policies Commit
three of the principal attorn
for the Federal Trade Commiss
have confirmed that conclus
and have testified that the o
safe and certain way of sell
commodities with assurance t
the pricing practice employed
legal, is to sell at f.o.b. mill pri

When this country was fou
ed, more than 150 years ago, m
products were sold on an f.
factory basis. This was necess
ly so because the limited tra
portation facilities of the day
quired that commerce be larg
confined to local markets. But
the transportation, communi
tion and financial systems of
nation grew, uniform delive
prices, zone pricing and frei
absorption came into being. M
companies achieved national
tribution of their products.

Billions of dollars of the mo

It pays to specify

Macwhyte ATLAS Braided Wire Rope Slings

There's a Macwhyte Sling that's the right sling for any sized load.

This Macwhyte ATLAS Special Choker sling is only one of many designs. Catalog on request.

No other braided sling has this combination of construction features:

1. ATLAS Slings are braided from right lay and left lay *endless* ropes.
2. In ATLAS Slings the left lay ropes are braided to the right, and the right lay ropes are braided to the left.
3. All ropes in ATLAS Slings follow a continuous spiral path throughout the entire body length.

This special construction guarantees *perfect balance*

. . . greater flexibility
. . . resistance to kinking
. . . better purchase on the load
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. . . maximum safety

See ATLAS Slings at National Safety Congress—Booth 78

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Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies.

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Macwhyte Distributors throughout the U.S.A. and other countries. Mill Depots in the following cities: New York, Pittsburgh, Chicago, Minneapolis, Fort Worth, Portland, Seattle, San Francisco, Los Angeles

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Member National Safety Council

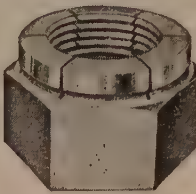
THEY'RE BOTH "SELF-LOCKERS"

UNBRAKO
Reg. U. S. Pat. Off.

FLEXLOC

"Unbrako" Socket Set Screw with Knurled Cup Point.

Pat'd. & Pats. Pend.
"Flexloc" Self-Locking Nut — one-piece, all-metal, full-threaded.



The patented KNURLED cup point of this popular "Unbrako" Socket Set Screw makes it a Self-Locker . . . because the keen edges of the counter-clock-wise KNURLS *positively prevent creep,* regardless of the most chattering vibration. A real fastener, if ever there was one . . . *positively will not shake loose!* Sizes from #4 to 1½" diameter, full range of lengths.

Because it is one-piece, all-metal, full-threaded and resilient . . . and, because it is a rugged "Stop", "Lock", and "Plain" nut *all in one*—processed to have an exceptionally uniform and long-lasting torque—the "Flexloc" Self-Locking Nut is becoming widely accepted. Request samples.

Write for the name and address of your nearest "Unbrako" Industrial Distributor and for the "Unbrako" and "Flexloc" Catalogs.

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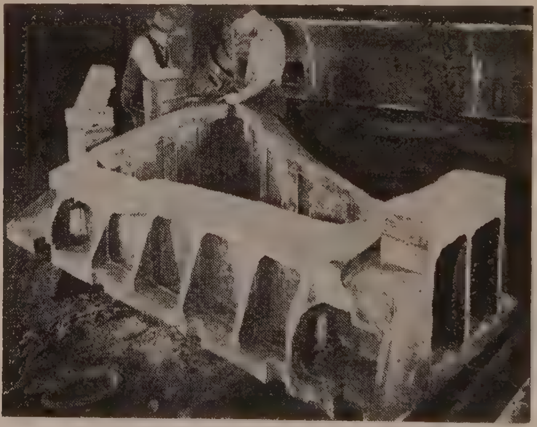
CHEAP CASTINGS CAN BE EXPENSIVE



Compared to the expense of machining this quarter panel, the cost of the casting is trivial. If a defect appeared after many hours of machine time had been spent on such a job, much more than the cost of the casting would be lost.

This doesn't mean you have to pay considerably more for sound, machinable castings. In fact, when you get that kind of castings from us, they probably won't cost you anything additional except the freight.

You'd be surprised to know how many customers at a distance are coming to us for gray iron, alloy, and *Strenes Metal* castings to save machining cost and grief. It's because they have learned by experience that it pays to get castings that don't show up blowholes, cold shuts, hard spots, cracks, and sponginess in the course of machining.

We do the same class of work on job castings as on *Strenes Metal* cast dies. That may sound like a broad statement, but we can prove it. If you want the proof, write or phone us.

THE ADVANCE FOUNDRY CO., DAYTON 3, OHIO

ADVANCE CASTINGS
STRENES METAL
ALLOY GRAY IRON
GRAY IRON

of American people have been
vested in industrial facilities
railroad properties in the be
that uniform delivered prices
freight equalization was both
ally and legally proper. Many
these investments may be
paired by a pricing philoso
which requires only f.o.b.
selling. The owners of those
vestments complain that it is
fair to change the rules du
the middle of the game.

The steel industry origin
grew up in Pittsburgh becaus
the availability of iron ore,
and power. The cement indu
originally grew up in the Leh
Valley because it was long
that only the rock in that
was suitable for the productio
cement. The steel and cement
dustries have, of course, gr
throughout the country, and Pi
burgh is now a substantial sur
steel producing area, while
Lehigh Valley is a substan
surplus cement producing are

Steel mills and cement pl
in those areas say that they
not continue to stay in busin
in normal times, unless they
able to ship their surplus pro
tion to distant areas, and that
cannot be done without fre
absorption which now appear
be prohibited.

The Pittsburgh Chamber
Commerce is now actively enga
in encouraging industry to m
to Pittsburgh. The erection
plants for steel users adjacen
the steel mills, seems to be in
sistent with the plant dispe
activities of our National Def
Program.

It has been urged that f
mill pricing may eliminate de
competition in many commodi
For example, it is said that
cement dealer in a given com
nity who purchases his cem
from the closest mill will be
to buy at a lower price and
have a substantial competitive
vantage over other cement dea
in the same town. This may
mately eliminate competitio
the dealer level in commod
such as cement. This is par
larly so when the nearby ce
mill does not care to have
than one dealer in the town.

Fifteen pct of the sugar
sumed in the United States is
sugar grown in the Rocky M
tain area. Yet only 3 pct of
population lives in that

se beet sugar growers say they st, therefore, ship their beet ar to distant markets; but en it is shipped East, it competes with Cuban cane sugar; and en it is shipped West, it competes with Hawaiian cane sugar. beet sugar growers say they not sell the normal production their product without absorb- freight and receiving varying l net returns.

he manufacturer of any prod- made from minerals or farm duce acquires a substantial in- nd freight advantage if he lo- es his plant close to the source his raw materials. Those raw erials, however, are found where nature placed them, generally man has not chosen the site of his large consum- areas the same sites chosen nature for her deposits of nat- l resources.

hus the manufacturer with an ound freight advantage, be- se of his proximity to the rce of his raw materials, auto- ically acquires an outbound ght disadvantage in shipping finished products to the con- ing areas where his custom- are located. And the manu- urer who locates his plant in consuming area, in order to uire an outbound freight ad- tage, automatically acquires inbound freight disadvantage. has never been questioned that a manufacturer may ab- inbound freight costs. We t now determine whether the ufacturer with an inbound ght advantage may not be per- ed to absorb outbound freight rder to compete with compet- s located closer to the cus- ers.

n Nov. 18, 1948, the Senior ociate General Counsel for the mission, who tried all these s in the courts, gave illumi- ng testimony with respect to ehousing and trucking prac- s. He testified that a manufac- r who had a chain of ware- ses throughout the country in ll markets, could ship his prod- to those warehouses and ab- the full cost of transportation such shipments. He further ified that these products or modities could then be sold of the warehouses at local es which did not include the ght to the local market.

nd in answering a hypotheti-

microhoned*

for: 20% to 40% more production

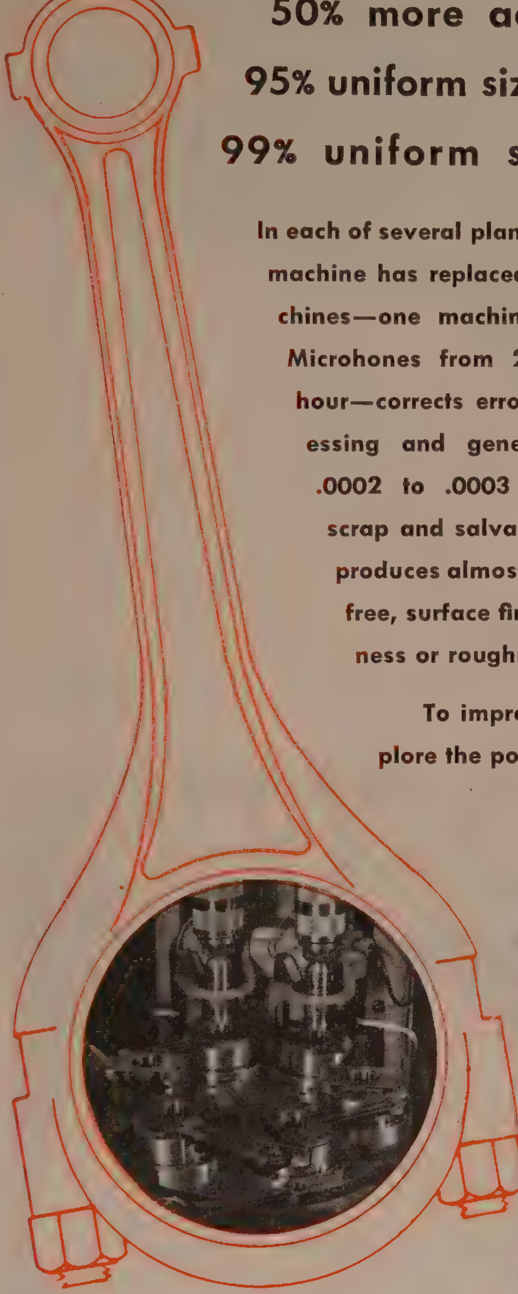
50% more accurate bearings

95% uniform size, fewer re-runs

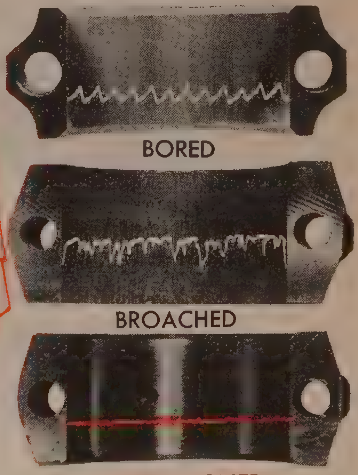
99% uniform surface finish

In each of several plants, one microhoning machine has replaced three grinding machines—one machine and one operator Microhones from 250 to 400 rods per hour—corrects errors from previous processing and generates accuracy within .0002 to .0003 inch—reduces oversize scrap and salvage re-runs to within 5%—produces almost perfectly uniform, chatter-free, surface finish of any desired smoothness or roughness.

To improve your production, let's explore the possibilities now.



Six-station fixture for Microhoning two connecting rods simultaneously.



Comparison of Profilograph records of typical connecting rod machining operations.

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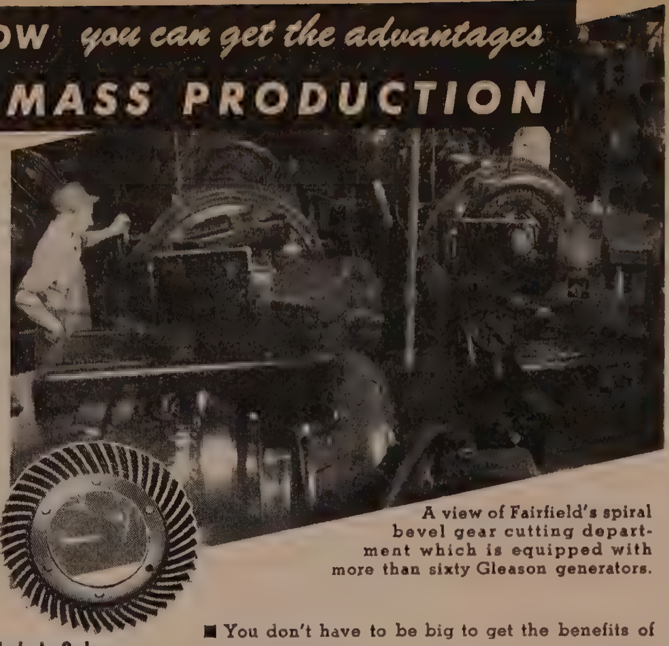

A view of Fairfield's spiral bevel gear cutting department which is equipped with more than sixty Gleason generators.

FINE GEARS Made to Order

Spiral Bevel
Straight Bevel
Hypoid • Herringbone
Helical • Differentials
Spur • Worms and
Worm Gears

■ You don't have to be big to get the benefits of MASS PRODUCTION when it comes to GEARS. Fairfield gives you the economy . . . the high production rates . . . the high uniformity of product made possible by big volume output with modern, high speed equipment. Rather than make a big investment in plant, machinery, and manpower, many gear users, large and small, now depend on Fairfield! It's a service that pays; make inquiry today.

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Drop Forged "C" CLAMPS

More Reliable . . .

Every characteristic essential to absolute reliability is built into ARMSTRONG Drop Forged "C" Clamps — maximum strength, extreme stiffness, extra large Tempered and Tested Screws, better "Tool Sense" and design.

That is why it is a good policy to standardize on ARMSTRONG "C" Clamps . . . As one of the 9 major ARMSTRONG lines your local dealer carries ARMSTRONG "C" Clamps in "Heavy Duty", "Medium Service", "Extra Deep Throat", "Spatter Resisting" and "Toolmakers" designs, in a wide range of sizes.

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"Medium Service"
"Extra Deep"
"Spatter Resisting"
"Tool Makers"

ARMSTRONG BROS. TOOL CO. "The Tool Holder People" 5209 W. Armstrong Ave. CHICAGO 30, U.S.A.
NEW YORK • SAN FRANCISCO

cal question, he testified that
competitor of that seller, loca
across the street from his pl
if you please, who did not ha
such a chain of warehouses, co
not sell his products in those
tant local markets without cha
ing the full freight to the lo
market, and that he could not r
ularly and customarily meet
local prices of the chain wa
houses operator. Thus the abil
to compete on a national ba
may well depend on the selle
financial ability to build a ch
of warehouses.

You will be further interes
in his testimony that a seller w
owns a fleet of trucks may lega
consider transportation costs
those trucks as a cost of his
ing business and is not required
charge the transportation cost
his customers. But a competit
across the street if you please, a
making the precisely same arti
shipping into the same are
through trucks of a common c
rier, is required to charge the c
tomer the full freight.

Thus, a seller's ability to co
pete in distant markets may w
depend on whether he is fin
cially able to purchase his o
fleet of trucks.

There may well be many e
nomic advantages of unifo
f.o.b. mill selling. These adv
tages may well offset all of
disadvantages of f.o.b. mill se
ing. But so important a char
in our national economy sho
only be put into effect at the
pressed direction of the Congre
It now appears that such prici
philosophy is being imposed up
industry under statutes desig
largely to prohibit unfair pr
discriminations in favor of ch
stores and to prevent unfair me
ods of competition largely in
form of false advertising.

The Congress must determ
when, if ever, any seller is to
denied the right to compete
any business, in any market, w
any competitor, under any pr
ing system including the abso
tion of freight, so long as he d
not act pursuant to a conspira
or agreement.

It seems clear that the Congr
must determine what pricing pr
tice will best promote our f
enterprise competitive system a
put it into law in such clear l
guage that businessmen who w
to be law-abiding citizens m
know what conduct is required
them to live within the law.

s maximum value for all users. Principal interest of this new mmittee will be in the use of nufacturing statistics by busi- ss. It will also be necessary to into this program the data re- ired for use in economic re- arch at the national level, and vital production information eded for the country's strategic anning.

Mr. Anderson has been a mem- r of the Census Advisory Board the past year. This group s the responsibility of sifting rough, and deciding which of hundreds of questions that are nstantly being proposed for the nsus of Housing, Population, siness, etc., will have the great- usefulness.

ontract Awards Are Up 2 Pct Over Past Month

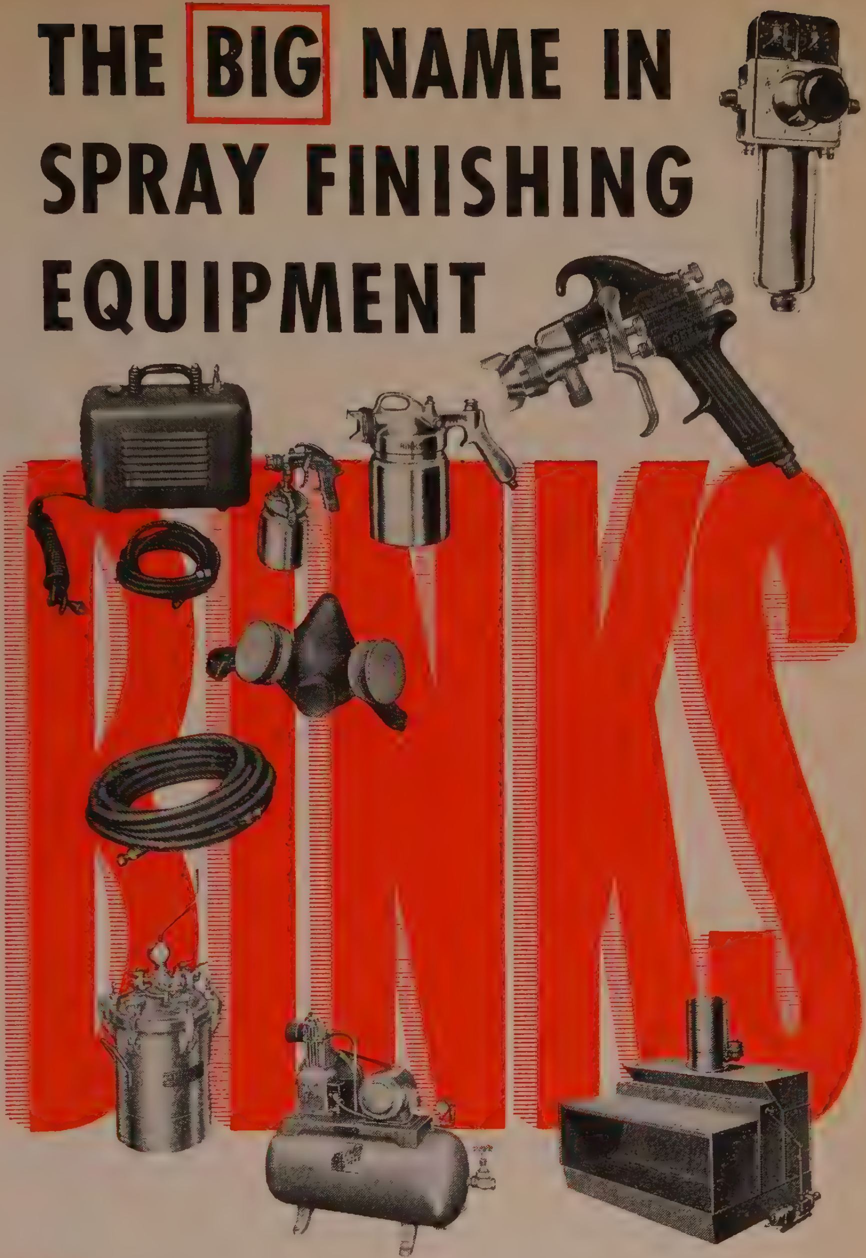
w York

• **Contracts awarded** for build- g and heavy engineering projects the 37 states east of the Rocky ountains last month totaled $778,- ,000 to reflect a gain of 2 pct er September and a decline of 2 from October of last year, ac- rding to F. W. Dodge Corp., a ct-finding organization in the nstruction industry.

Most striking gains during the nth as compared with the previ- s month and the corresponding nth of the previous year were ported for upstate New York, stern Pennsylvania, West Vir- nia, Louisiana and Mississippi. assifications showing the most bstantial gains were hospitals d institutions, and public non- sidential buildings, with mod- ate gains in commercial building ntracts.

Last month's contract volume ought the cumulative total for first 10 months of the year to er $8 billion, a figure 27 pct gher than that reported for the rresponding period of last year.

Residential awards in October gregated $296,760,000, showing increase of 6 pct over Septem- r but a decline of 15 per cent mpared with October 1947. Resi- ntial contracts in the first 10 nths in the 37 eastern states nounted to over $3 billion, re- cting a gain of 17 pct over the rresponding 10 months of last ar.



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Amherst, Ohio

Sink-Float Processes Create New Reserves Of Mineral Resources

New York

• • • Large new reserves of mineral resources are being created by the use of sink-float plants in which heavy-density liquids and mixtures are used to concentrate ores and clean coal, according to John T. Sherman, American Cyanamid Co. engineer.

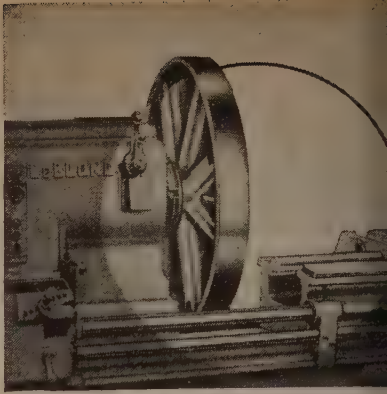
"Sink-float processes, highly efficient in separating coarsely crushed solids on the basis of specific gravity differences, have developed rapidly during the past few years and today are treating millions of tons of ores and coal each year," Mr. Sherman said. "The two largest coal cleaning plants in the world, now under construction, will employ sink-float methods and the use of these processes will continue to expand sharply in the future."

Because of low capital cost and cost of operation, sink-float plants can be used to grade up sub-marginal ores to the point where they can be treated profitably, he said. Waste dumps and coarse tailings from less efficient concentration methods can be treated. Cheaper, less selective mining methods can be used and the waste discarded prior to concentration by older, conventional methods.

"Although many ores cannot be treated by sink-float methods, practically every coal can be cleaned by one or more of these processes," he continued. "This fact becomes increasingly important as the better seams of coal are exhausted and it becomes necessary to use lower grade coals more difficult to clean. The increasing use of mechanized mining and full-seam mining throws a greater burden on the cleaning plant because of the larger and more variable quantity of refuse in the coal."

He pointed out that utilization of the force of gravity to separate valuable from worthless minerals is one of the oldest and cheapest methods of concentration. The gold miner's pan, sluice boxes, jogs, shaking tables and a host of other devices have been used to separate the heavy constituents of an ore or raw coal from the light.

The mineral dressing engineer has known for many years that



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gine lathe turning. All LeBlon
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tention. The only plain bed ga
lathes with these advantages plu
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space of just one lathe, and with bu
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(Advertisement)

cise separation on the basis of
cific gravity alone can be ob-
ned by employing a liquid hav-
a specific gravity the same as
gravity at which a separation
desired," Mr. Sherman said.
hen ore or coal particles are
roduced into such a liquid,
se having a specific gravity
her than that of the liquid will
k, while those that are lighter
n the liquid will float."

he obstacle in applying this
nciple, the paper stated, has
n the lack of cheap liquids
ing the desired specific gravi-

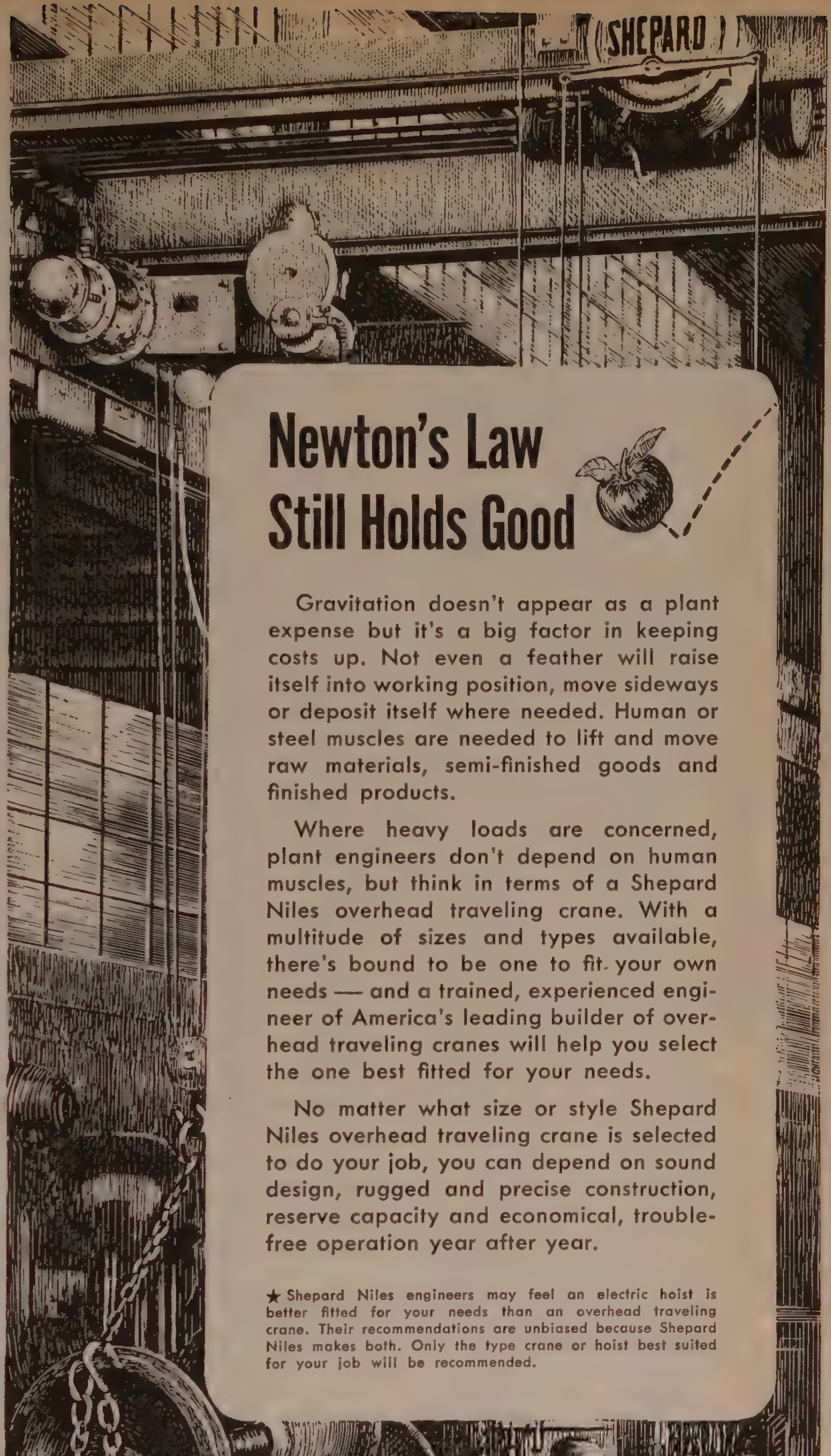
Having been frustrated in de-
oping a satisfactory heavy liq-
process, the mineral dressing
ineer has sought to achieve
same results by simulating a
vy liquid," the speaker said.
his can be done by mixing a
e, heavy solid with water. While
fine particles are in suspen-
n, the mixture, known as a me-
m, has a gravity higher than
ter and can be used to make
vity separations in the same
y as can be accomplished by
use of heavy liquids."

e stated that while few solids
wn today possess all the quali-
ations for the ideal medium
id, three have been found that
fill the requirements to a
ater or less degree, ferrosili-
, galena and magnetite. Today,
of a total of 35 sink-float
nts employing ferrosilicon or
ena media, all but 8 use ferro-
con and two of these are being
verted to its use.

errosilicon is cheaper and
der than galena, highly sus-
tible to recovery by magnetic
arators and not subject to
ting. The successful use of fer-
ilicon on iron ores, the speaker
d, led to its use in the concen-
tion of a variety of metallic
non-metallic ores—lead-zinc,
garnet, fluorspar, magnesite,
ite, spodumene and diamond
und.

ccording to Mr. Sherman ga-
a is a naturally occurring lead
It is heavy, can be recovered
froth flotation and can be finely
und. It has the disadvantage of
ng so soft it abrades readily
is subject to loss as slime. It
ot cheap—especially at today's
h lead prices.

lagnetite is highly magnetic,
ich facilitates its recovery, is



Newton's Law Still Holds Good

Gravitation doesn't appear as a plant expense but it's a big factor in keeping costs up. Not even a feather will raise itself into working position, move sideways or deposit itself where needed. Human or steel muscles are needed to lift and move raw materials, semi-finished goods and finished products.

Where heavy loads are concerned, plant engineers don't depend on human muscles, but think in terms of a Shepard Niles overhead traveling crane. With a multitude of sizes and types available, there's bound to be one to fit your own needs — and a trained, experienced engineer of America's leading builder of overhead traveling cranes will help you select the one best fitted for your needs.

No matter what size or style Shepard Niles overhead traveling crane is selected to do your job, you can depend on sound design, rugged and precise construction, reserve capacity and economical, trouble-free operation year after year.

★ Shepard Niles engineers may feel an electric hoist is better fitted for your needs than an overhead traveling crane. Their recommendations are unbiased because Shepard Niles makes both. Only the type crane or hoist best suited for your job will be recommended.

Shepard-Niles
CRANE & HOIST CORPORATION

356 SCHUYLER AVENUE • MONTOUR FALLS, N. Y.

INSTANT, DIRECT
Temperature Readings Accurate to within a Fraction of a Scale Division with

XACTEMP
Trade Mark Reg. U. S. Pat. Off.

HAND PYROMETERS

For All-around General Temperature Checking

Specify XACTEMP PYROMETERS wherever a quick, accurate temperature determination is needed. Used for surface temperatures of welds, welded rail ends, billets, slabs, heated rollers, forgings, ovens, hot plates, furnace walls—for general inspection in furnaces, lead and salt pots, galvanizing tanks, core ovens, type metal, etc. Long-life cast aluminum and brass construction. Medium resistance, fast-acting indicator, provided with Alnico V magnet—direct reading dial starts at 50° F. or 60° F. Simple, easy to operate—no adjustments necessary—always ready for use. Will take most types of thermocouples. A full line of thermocouples available from stock.

FOUR MODELS

Catalog No.	Range	Thermocouple
LT 800	60-800 F.	Iron-Constantan
LT 810	60-1200 F.	Iron-Constantan
LT 820	60-1600 F.	Iron-Constantan
LT 830	50-2500 F.	Chromel-Alumel

PRICE WITHOUT THERMOCOUPLE $39.50

Ask also about XACTEMP PYROMETERS for taking temperatures of molten non-ferrous metals

GORDON SERVICE

CLAUD S. GORDON CO.
Specialists for 33 Years in the Heat Treating and Temperature Control Field
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Dept. 16 • 7016 Euclid Avenue • Cleveland 3, Ohio

heavy enough to yield any gravity required in coal mining and is a fraction of the cost of ferrosilicon, he said. It is somewhat easier to handle because of its lower specific gravity. It is more finely ground than the other medium solids and for this reason, produces a more stable medium. The fine size also reduces wear on the equipment.

In addition to coal, magnetite can be used as a medium solid for the separation of other low gravity minerals such as gypsum, potash ores and concrete aggregate.

Concrete aggregate is treated, Mr. Sherman said, in order to eliminate low gravity particles that weaken the concrete. "If, as seems probable, this attempt proves successful, it will make possible the use of local aggregates in construction work that have been turned down in certain areas because of inferior quality. This will result in freight savings that far outweigh the cost of separation."

Labor requirements for the sink-float plants are very low, Mr. Sherman said. The equipment is largely automatic and aside from equipment maintenance, the operator has little to do except to take periodic samples of the medium to check the gravity.

"Capacities of sink-float plants are high," he continued, "as the separation of sink from float takes place in a few seconds. A unit equipped with a seven foot diameter cone separatory vessel can treat in excess of 600 tons of feed in a 24 hour day.

"Although commercial sink-float installations have been restricted to the treatment of material coarser than 10 to 14 mesh, pilot plant studies made at the mineral dressing laboratory of American Cyanamid Company indicate the possibility of making good gravity separations on particles as fine as 48 mesh in the case of ores and as fine as 100 mesh in the case of coal. This development will help to close the gap between gravity methods of concentration and froth flotation, the most efficient method of concentrating fine ores and coal," Mr. Sherman concluded.

Greater Tonnage
Per Edge of Blade

AMERICA
SHEAR KNIFE C
HOMESTEAD · PENNSYLVAN

Jses Wing-Skin Milling To Obtain An Efficient Strength-Weight Ratio

os Angeles

• • **Weight and strength** are of rime importance in aircraft deign. Starting at the fuselage and oing outward, the load on the ving becomes increasingly less. o carry the required load withut unnecessary weight, The Jorth American Aviation, Inc., as come up with a new idea, wingkin milling.

The rate at which this load dereases is very rapid in small high erformance aircraft. Wing skins r outer surfaces actually carry nost of this load. Obviously a skin eavy enough to carry the maxiium load at the fuselage is much eavier and stronger than necesary at its outer end.

For this reason, the engineerig department conceived the idea f cutting away this unnecessary iaterial in the wing areas where was not required. This design ives the necessary strength with ie minimum weight.

The skins are not just a simple aper, but are "sculptured" to ieet the exact stress requireients of each particular section f the wing. A tapered sheet is all nat is necessary to carry the load. ut there are other requirements 'hich enter into the picture. A ieans must be provided to "load nd unload" the stresses. This is one by means of rivets or bolts. ufficient area to transmit the load the bolts must be provided and his means an additional thickess, a greater thickness than the oad carrying requirements would idicate. As an example, along ach edge of the sheet at the spars, i area about one inch wide of dditional thickness provides this ecessary rivet bearing surface. his milling operation, while not fficult in itself, did require speial tooling and equipment in rder to do it economically. The illing operation is done on Cinnnati Hypro planer type mills.

The working area is covered by crane way. This crane way has acuum lifting devices which const of a triangle-shaped frame rovided with three vacuum cups. small vacuum pump and motor located on top of this frame. In eration the vacuum cups are

PRODUCTION GOES UP
COST GOES DOWN
with
OSGOOD and GENERAL
MOBILCRANES

In some plants, materials handling operations only add to the total cost of production . . . in others — where OSGOOD and GENERAL MOBILCRANES are on the job — materials handling is a modern, efficient operation that increases productive capacity, cuts production costs to the bone.

Pneumatic-tired MOBILCRANES are easy on floors, require no special tracks or runways. One-engine operated, one-man controlled for fast, precise maneuverability in the tight spots that will save time and money on your handling jobs. Write today for complete specifications . . . learn how MOBILCRANES can increase productive output in your plant without increasing production costs.

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THE OSGOOD CO. O-G THE GENERAL CO.
EXCAVATOR
MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

NACO* Brushes

made with

KEYSTONE WIRE

When you insist on the best in materials and workmanship, you'll make a hit with customers every time. Take the wire that holds the bristles so securely on NACO Brushes, for example.

Keystone BRUSH WIRE is specified by the manufacturer because its attractive silver-brite galvanized finish does not chip or peel when tightly twisted. Also, this quality wire has the proper ductility for accurate forming.

Yes, it's this critical choice of materials . . . plus expert craftsmanship that assures the National Brush Company of an established place in their market.

The Keystone organization takes pride in the fact that Keystone Wire is a recognized factor in the sound construction of NACO Brushes.

**The National Brush Company*
Aurora, Illinois

KEYSTONE
MUSIC SPRING WIRE
KEYSTONE STEEL & WIRE CO.
PEORIA, ILLINOIS

SPECIAL ANALYSIS WIRE
for all industrial purposes

KEYSTONE STEEL & WIRE CO., Peoria 7, Ill.

lowered against the sheet, th
vacuum pump turned on, and whe
it has reached 27 inches of me
cury, which takes a very few se
onds, the sheet may be quickl
and easily lifted to the next ope
ation. The triangle design wa
selected because they were th
only points which were flat afte
the milling operation and com
mon to all the various part num
bers.

The equipment described is en
tirely satisfactory for the opera
tions which it is required to pe
form. Future designs will un
doubtedly require a much mor
difficult machining operation, an
much more highly specialize
equipment may then be necessary

Begin Final Phase Of Construction in Long Island Atomic Pil

Upton, L. I.

• • • **The first block** of graphit
in the atomic pile at Brookhave
National Laboratory at Upto
L. I., was set into place recentl
before a small delegation of scien
tists and officials representing th
U. S. Atomic Energy Commis
sion, Associated Universities, Inc
Brookhaven National Laborator
and The H. K. Ferguson Co., th
engineering and building firm i
charge of construction.

Signifying the start of the fina
phase of the construction pro
gram, the graphite block—the firs
of more than 60,000 that will fo
low—was placed into the nuclea
reactor by Wilbur E. Kelley, Ma
ager of the New York Operation
Office of the U. S. Atomic Energ
Commission. The ceremony wa
held under strict security prov
sions, and attendance consiste
only of persons cleared by sec
rity regulations.

In an informal progress repo
on the Brookhaven constructio
program, Wells N. Thompso
Ferguson vice-president in charg
of building the nuclear react
and related facilities, disclose
that the pile will be ready to g
into operation during the earl
part of 1949. Other structures, i
cluding the pile laboratory,
"hot" laboratory and a cyclotro
building, will be completed th
Spring.

Among those honored in th
brief ceremony in the pile stru

ure was Dr. Lyle B. Borst, chairman of the Brookhaven Nuclear Reactor Project, under whose su-ervision the pile was designed. ncluded in the attendance were Eldon C. Shoup, vice-president of Associated Universities, Inc.; Dr. Leland J. Haworth, Director of Brookhaven National Laboratory, and about 20 engineers and scienists directly connected with the ile project.

The Brookhaven atomic pile has een designed to serve as a reearch tool. It is an air-cooled graphite uranium type pile and its lexibility will enable it to perform a great number of useful research unctions in the beneficial appliation of nuclear energy.

The blocks of graphite now beng set in the pile will contain the actual chain reaction that will ake place within the pile strucure. In this process, the graphite serves as a moderator, and variuus instruments and movable strips of a neutron absorbing maerial are used to control the reaction.

aul Hoffman Cites Aims And Progress Within ERP

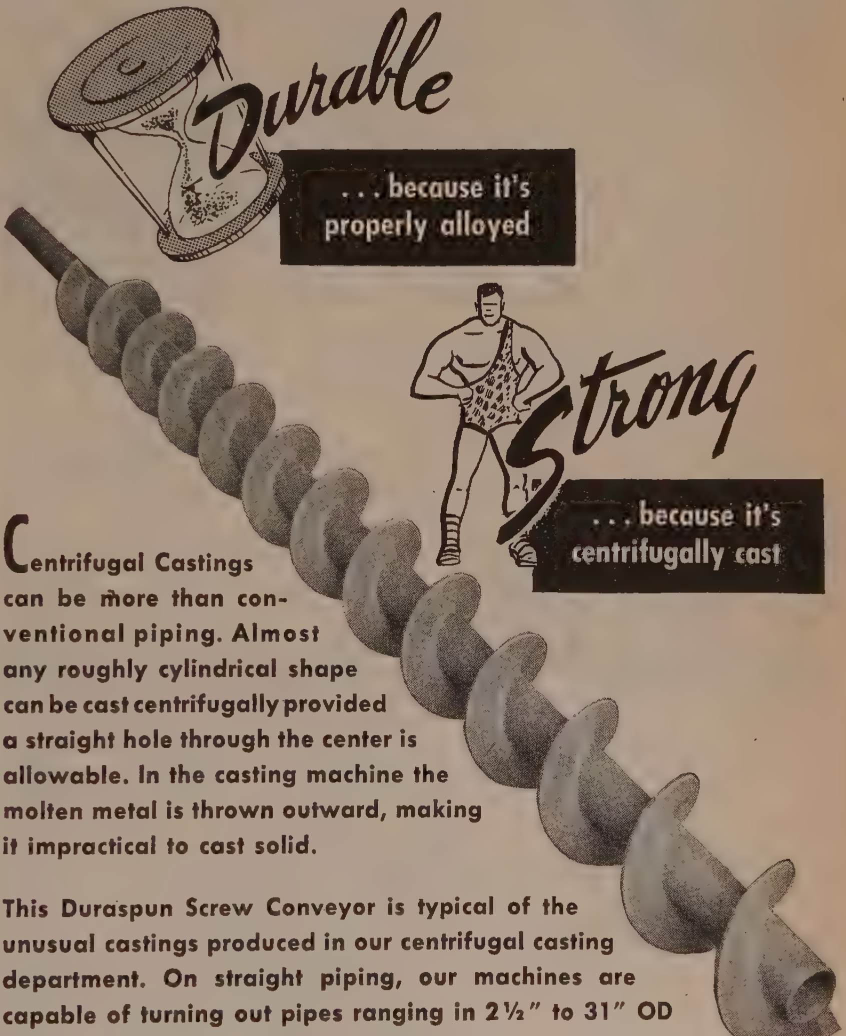
hicago

• • • **Paul G. Hoffman,** adminisrator of ECA, reported on the rogress of the European Recovery Program to a joint meeting of the hicago Assn. of Commerce and Inustry and the Executives Club of hicago members here on Nov. 5.

Mr. Hoffman declared that the rice we have paid to learn the esson that isolationism won't work as been terrifically high but on Apr. 3 of this year when Congress assed the Foreign Assistance Act, t constituted this country's first ormal acknowledgment of the inerdependence of our economy with hat of western Europe. He outlined ow the Marshall Plan operates.

He emphasized to 1300 business en present that ECA is not an inrumentality for waging a cold ar against Russia. He quoted rom Secretary of State Marshall's ow famous speech in June of 947, "Our policy is directed not gainst any country or doctrine ut against hunger, poverty, deseration and chaos."

Mr. Hoffman told the group that e considered himself and the rest f ECA as investment bankers for ecovery. "It is our task to invest



DURASPUN
SCREW CONVEYOR

Durable
. . . because it's properly alloyed
Strong
. . . because it's centrifugally cast

Centrifugal Castings can be more than conventional piping. Almost any roughly cylindrical shape can be cast centrifugally provided a straight hole through the center is allowable. In the casting machine the molten metal is thrown outward, making it impractical to cast solid.

This Duraspun Screw Conveyor is typical of the unusual castings produced in our centrifugal casting department. On straight piping, our machines are capable of turning out pipes ranging in 2½" to 31" OD and, according to diameter, up to 15' long.

If you are interested in superior castings — more uniform, denser and pocket-free castings — order centrifugal castings. Write us about your requirements and we'll recommend the proper alloying elements to meet your corrosive, high temperature, abrasive conditions.

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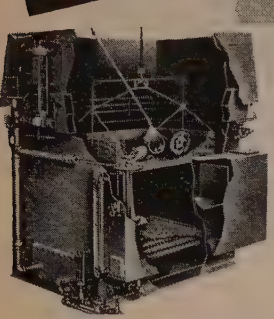
METAL GOODS CORP.: St. Louis • Houston • Dallas • Tulsa • New Orleans • Kansas City

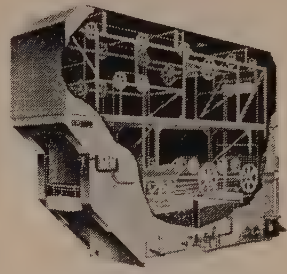
You'll SAVE on EVERY Metal-Cleaning Job with DETREX Machines and Cleaning Agents

DETREX builds all sizes of hand-operated and conveyorized degreasers and washers for parts of every shape and size from needles to auto bodies—castings, forgings, tubing, wire and stampings—ferrous, non-ferrous and mixed loads — in any volume desired.

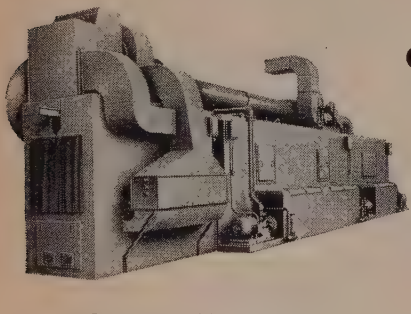


Detrex Hand-Operated Vapor-Slush Degreaser

For most jobs, *standard* Detrex machines provide top speed and economy, either used "as is" or with minor modifications. For the really unusual jobs, special machines are designed and built to assure the same top efficiency.



Three-Dip Detrex Degreaser with Cross-Rod Conveyor



Conveyorized Detrex Multi-Stage Washer with Three Spray Zones and Blowoff

DETREX SPECIALIZED CLEANING AGENTS Include:

DEGREASING SOLVENTS for

★ *Both ferrous and non-ferrous metals, and adverse operating conditions*—PERM-A-CLOR, the most highly stabilized of all trichlorethylene solvents.

★ *Average applications*—TRIAD, identical to Perm-A-Clor in cleaning power.

ALKALI and EMULSION CLEANERS for

★ *Aluminum* parts and *painted surfaces.*

★ *Brass, aluminum* and *white metal* parts.

★ *Heavy-duty* cleaning of *iron, steel* and their alloys.

★ Cleaning and neutralizing prior to *vitreous enameling.*

★ *Electrolytic cleaning* especially for plating.

★ *Heavy-duty stripping* of pigmented oil paints, synthetics, and baked enamels.

★ *Removing all kinds of oils and insoluble dirt,* without attack on surface or coating.

Detrex machines and cleaning agents, *fitted to the job,* assure fast and thorough cleaning at lowest cost. That's why it pays to see your Detrex man on *every* metal-cleaning application.

DETREX DETROIT, MICH.

DETREX Corporation
DETROIT 32, MICHIGAN
DEGREASING MACHINES AND SAFETY SOLVENTS • METAL PARTS WASHERS • ALKALI AND EMULSION CLEANERS AND STRIPPERS • PROCESSING EQUIPMENT • SPRAY BOOTH COMPOUNDS

your dollars so wisely that the recovery of the European economy will become an accomplished fac by June 30, 1952." He said tha their policy was definitely one o recovery and not relief. He als told the group that for the second third and fourth years of the operation progressively smaller appropriations will be required t meet foreign needs.

The administrator related som of the difficulties and far reachin decisions he and his group mus face. Not long after he took th job, he told the group that $25 million of requisitions were dumpe on his desk and he was notified tha it would be appreciated if he woul sign the requisitions quickly. H didn't. The reason "it was ou feeling that instead of recovery programs these requisitions represented shopping lists which wer being presented to us.

"It seemed utterly impossible t pass intelligent judgment o whether a given transaction shoul or should not be financed by ECA without knowledge of the overal recovery program. We first insisted that the European nation implement their pledges of self hel and mutual aid by providing u with programs for the full perio of operation."

The European nations have cooperated, Mr. Hoffman told the assembly. "I am glad to report tha we now have in Washington a recovery program for each of the nations for the first year, that thos programs have been screened b the OEEC for duplications or conflicts, and mutual adjustment necessary to assure a coordinate program in all Europe has bee made."

He said that ECA expects to hav the second year's program and th fourth year program by Feb. 1 1949. He further told the grou that he does not anticipate any substantial number of changes as result of the screening in Washington of the programs as presente so far. He said of all the nation receiving or to receive aid, Gree represents the toughest problem.

The intangible gains of th Marshall Plan, the administrato said, are important. "It was th announcement of the Marshall concept which rebuilt enough hope halt the march of communism Italy and France in 1947. It is th fact of Marshall Plan aid whic is giving to the free peoples

Europe a continuing determination o resist totalitarianism and remain free. And, finally, it is the new spirit of cooperation that has ome to Europe as a direct result f the Marshall Plan that offers us ur best hope of peace." The dynamic former president of Studebaker Corp. ended his talk by delaring, "All that is needed to avoid World War III is that we plan together, work together and stick together."

Aluminum Reduction Plant Being Offered For Sale or Lease

Washington

• • • **The Federal Works** Agency is offering for sale or lease the aluminum reduction plant at Riverbank, Calif. Final disposition of the plant, which was designed to produce 108 million lb of aluminum for World War II use, must meet the approval of the Munitions Board, D. F. Carpenter, chairman of that board, and W. E. Reynolds, Commissioner of the Public Buildings Administration, FWA, announced.

Disposal of the plant will be handled by the Division of Industrial Properties, PBA, Washington, D. C., which is asking for sealed proposals for purchase or lease to be received until 3:00 p.m., Jan. 12, 1949.

Production facilities of the plant consist of three substantially completed pot lines of 128 pots per line, of which two were in service during the war. Some rehabilitation work by the purchaser or lessee will be required to put the plant back in operation.

Relocation of the facilities will be considered for approval by the Munitions Board, providing there is no decrease in the rated capacity of the relocated equipment. Costs of rehabilitation or relocation would be borne by the new operator. While some of the buildings are not movable, the functional lines and many of the structures are suitable for relocation, if it is found desirable.

Disposal of the plant is subject to provisions of the National Security Clause, which in general requires that the plant's productive capacity be made available to the government if needed for national defense purposes.

for a

STEAM LOCOMOTIVE

. . . or a TOY ONE

Cotter pins! Here's one 18 inches long that weighs over two pounds. Again—there's a box of 1,000 that weighs a little over an ounce. Everyone knows some of their uses. No one knows them all.

● AMERICAN CHAIN makes cotter pins in two basic styles, Acco with extended prong or even ends, and CAMPBELL which is self-spreading. There are over 400 variations of size, type and material. The materials are steel, stainless, brass, bronze and monel. Although produced by the million, each pin is as straight and as accurate to size as though individually made.

● Look to AMERICAN for all types of electric welded and forge welded chain—weldless chain made of formed or stamped links—a complete line of fittings, attachments and assemblies—repair links.

Buy AMERICAN—the *COMPLETE* Chain Line

ACCO

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York,
Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

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In Business for Your Safety

Ask the man who knows
...Your Victor distributor

Which blade?
How many teeth per inch?
How many strokes per minute?

These and other questions puzzle many a hack saw user. If they puzzle you, see your Victor distributor. He has the experience and knowledge to show you how to cut metals and plastics faster, easier and better . . . how to choose the right blade for various materials . . . how to get the most from each stroke of the hack saw. Yes, a little advice from the Man Who Knows will save you time and money in the long run.

Ask your distributor for free copies of "Metal Cutting" and the famous Victor Wall Chart containing helpful hints on the selection, care and use of hack saw equipment.

VICTOR SAW WORKS, INC.
MIDDLETOWN, N. Y., U. S. A.
Makers of Hand and Power Hack Saw Blades, Frames and Band Saw Blades

Personals

(CONTINUED FROM PAGE 139)

- **C. B. Johnson** has been named chief engineer and **E. R. Gilmore,** director of research, Pittsburgh Equitable Meter division, Rockwell Mfg. Co., Pittsburgh. Mr. Johnson joined Rockwell in 1929 and in 1944 was appointed chief engineer of the Nordstrom Valve division. Mr. Gilmore joined the Pittsburgh Equitable Meter Co. in 1936 and has served as chief engineer of the meter and regulator divisions of Rockwell.

- **George A. Ellis** has been elected to the board of directors of Avco Mfg. Corp., New York.

- **John M. Munro,** sales representative for E. C. Atkins & Co., Indianapolis, has been transferred from his territory in north central Indiana to the Cincinnati district formerly covered by **B. L. Owens,** now manager of Atkins' Chicago branch.

- **Titus N. Radu** has been named foreign sales manager, the Arco Co., Cleveland and Los Angeles. Mr. Radu came to Arco from United Laboratories Export Corp. where he served as vice-president in charge of foreign sales.

- **Ralph O. Wirtemburg,** who formerly served as eastern regional sales manager, has been placed in charge of special assignments originating from the general sales manager's office, New Departure Div., General Motors Corp., Bristol, Conn. **James P. Gillilan,** manager of the department's New York zone office, succeeds Mr. Wirtemberg as eastern regional manager. **Clifton S. Fleet** fills the vacancy created by Mr. Gillilan's transfer.

- **G. O. Britton** has been named domestic sales manager and **E. B. Schlenk,** district representative, Athey Products Corp., Chicago. Mr. Britton became associated with Athey recently in the capacity of assistant domestic sales manager, having previously served as sales manager of Kaiser-Frazer Farm Implement Division. Mr. Schlenk had previously been em-

"All-Clear" PROFITS

Ban bottlenecks at doorways with

KINNEAR DOORS

Lost time, wasted manpower, excessiv
heating and air-conditioning costs ar
often the price of doorways that *lac*
the full clearance, space-saving feature
and operating ease of Kinnear Steel Rol
ing Doors. These doors combine th
smooth efficiency of *coiling upward actio*
with the rugged resilience of *interlockin*
steel slat construction. They complete
clear the way for free flow of traffi
Rising vertically, they roll compact
above the lintel, out of reach of damag
from wind or vehicles. All surroundin
floor and wall areas remain usable. Whe
closed, the doors form a sturdy steel ba
rier against fire, theft, intrusion, an
weather. They are easy to open an
close, whether operated by hand, by chai
or crank mechanism, or by motor ope
ators.* Doors made to fit any openin
in old or new buildings. Send for detail

*INSTANT CONTROL FROM ANY POINT
Kinnear Doors, when operated by motor, respond to finger pressure on near or remote pushbuttons.

THE KINNEAR MANUFACTURING C
1760-80 Fields Ave. • Columbus 16, Ohio
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Offices and Agents in Principal Cities

Saving Ways in Doorways
KINNEAR
ROLLING DOORS

ployed in the sales division of Roy C. Whayne Supply Co. Inc.

• **G. E. Seavoy** has been named vice-president in charge of the process sales division of the Whiting Corp., Harvey, Ill., and **M. J. Rice**, vice-president in charge of the industrial sales division. Mr. Seavoy has been connected with the Swenson Evaporator Co. (Process Div.) of the Whiting Corp. for the past 20 years, the last 10 as vice-president and manager. Mr. Rice has been in the employ of Whiting since 1926 in both engineering and sales departments. For the past five years he has been vice-president in charge of the industrial sales division.

• **George Lasher,** formerly resident manager of the Fisher Body Stamping plant of General Motors Corp., in Detroit, has been named director of operations in the new blanking plant of the Fisher Body division at Ambridge, Pa. Mr. Lasher will also supervise the building of the new stamping plant near Pittsburgh. **Anthony Stromzand,** now assistant resident manager of the Fisher Body plant at Grand Rapids, has taken over the Detroit plant. **T. C. Fletcher,** senior production engineer on the general office staff of the division, has been named to the Grand Rapids post.

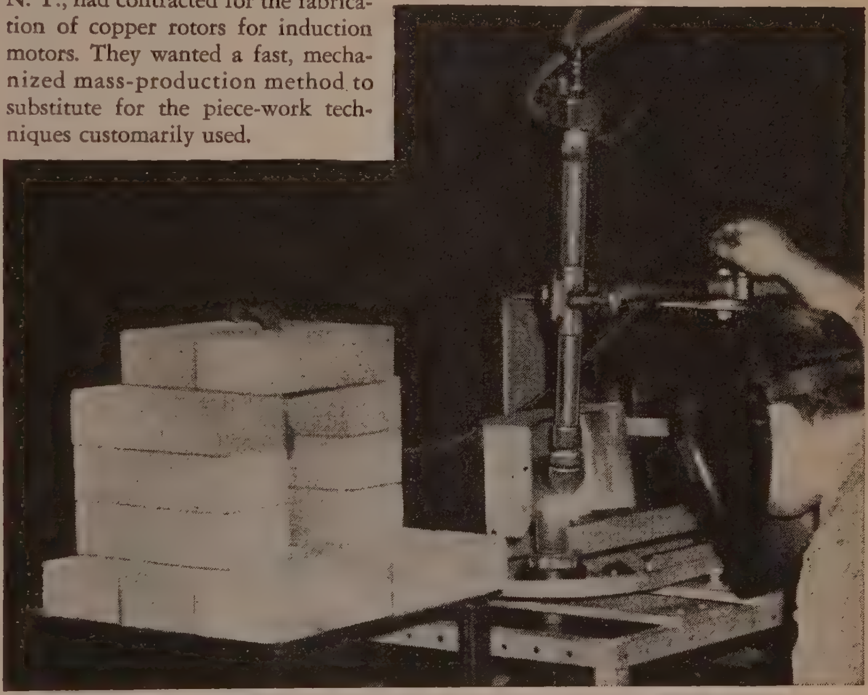
• **Leonard G. Taggart** has been named director of purchasing, Sylvania Electric Products, Inc., New York. Mr. Taggart joined the company in 1933 in the Engineering Specifications Dept. Prior to his new appointment he served as manager of purchasing for the company's radio tube division.

• **Henry Gifford** has joined the Heavy Chemical Sales Div., Mathieson Chemical Corp., New York, with headquarters in Chattanooga, Tenn. Prior to joining Mathieson, Mr. Gifford served on the sales staff of Allied Chemical & Dye Corp.

• **Thomas C. Yarnall** has been named manager of the Detroit district of the Replacement Tire Sales division of B. F. Goodrich Co., Akron. He has previously served the company as manager of store merchandising. Mr. Yarnall joined the company 20 years ago. He succeeds **E. A. Holsten** who has resigned.

Heliwelding permits mechanized rotor mass-production

SALKOVER METAL PROCESSING CORP., of Long Island City, N. Y., had contracted for the fabrication of copper rotors for induction motors. They wanted a fast, mechanized mass-production method to substitute for the piece-work techniques customarily used.



H. A. Huff, Jr., Airco Technical Sales Representative, suggested Heliwelding with an Airco machine holder. He devised a balanced work-cycle which permitted a simultaneous preheating and welding operation. When, for example, one rotor is being preheated, another is welded. A spindle holds and turns the latter under a 1/8" tungsten electrode in an Airco water-cooled machine Heliweld holder, mounted flexibly on the Radiagraph arm. Straight polarity 150 amperes D.C. is used, with helium as the shielding gas.

The operation is rapid and production is extremely high. Not only is the method economical, but most important, it permits complete control of operating variables — results in finer welds, with a minimum of rejects.

• • • •

TECHNICAL SALES SERVICE — ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS

To assure its customers of high efficiency in all applications of the oxyacetylene flame or electric arc, Air Reduction makes available the broad, practical experience of its nationwide Technical Sales Division personnel. The collective experience and knowledge of these specialists has helped thousands to a more effective use of Airco processes and products. Ask about this Airco "Plus-Value" service today. Write your nearest Airco office. (In Texas: Magnolia Airco Gas Products Company . . . On West Coast: Air Reduction Pacific Company)

AIRCO **AIR REDUCTION**

Offices in all principal cities

Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories

British Steel Output Above Revised Target

London

• • • **Steel output** in Britain in October reached the record annual rate of 15,455,000 long tons. This compares with the previous record annual rate of 15,440,000 long tons reached in June of this year. The comparative figure for October, 1947, was 14,315,000 tons, which was the previous best rate for October.

Production in September this year, the first full month after the holidays, was at the annual rate of 15,435,000 tons.

Figures now announced show that production is still running well above the Government's revised target of 14,500,000 tons fo 1948.

The ingot and castings table shows that the weekly average output in October was 297,200 tons, compared with 269,200 tons for the third quarter.

PIG-IRON
NET TONS

	1947		1948	
	Weekly Average	Annual Rate	Weekly Average	Annual Rate
First Quarter	134,400	6,990,000	174,700	9,084,000
Second Quarter	141,600	7,362,000	182,000	9,464,000
Third Quarter	146,700	7,626,000	175,800	9,143,000
October	160,600	8,352.000	183,200	9,525,000

STEEL INGOTS AND CASTINGS
NET TONS

	1947		1948	
	Weekly Average	Annual Rate	Weekly Average	Annual Rate
First Quarter	216,000	11,232,000	287,200	14,933,000
Second Quarter	244,100	12,694,000	294,700	15,325,000
Third Quarter	235,400	12,240.000	269,200	13,998,000
October	275,300	14,316,000	297,200	15,455,000

Future Gasoline Supply To Chemical Industry

Columbus, Ohio

• • • **Sometime in the future** whe the United States must turn t natural gas, oil shale and coal fo its gasoline supply, the chemis will play an even greater rol than he does nowadays in the vas petroleum refining industry, according to T. A. Boyd of Genera Motors Research Laboratories.

Mr. Boyd, who collaborated wit Charles F. Kettering and the lat Thomas Midgley, Jr., in development of leaded fuels which raise knock limits of automotive an aircraft engines, addressed th 75th jubilee celebration of th Ohio State University chemistr department.

"It is not reasonable to expec the supply of petroleum to las indefinitely." he said. And, if an when petroleum fails, we are going to have to fall back on othe sources for liquid fuels. He emphasized that failure of the petroleum supply is some distanc away, according to the best authorities on the subject.

"Fortunately, our reserve o natural gas is as large as that o petroleum, our supply of oil shal is equivalent to nearly five time the known reserve of petroleu and our coal supply is 60 times a large as petroleum," he added.

"When we have to produc liquid fuels out of these material the making of gasoline is going t be a chemical industry to an eve greater degree than is the petroleum refining industry today," M Boyd declared.

He pointed out that a plant no under construction at Brownsville, Texas, is expected to mak out of natural gas by syntheti means 7000 barrels of gasolin and diesel fuel per day, along wit a large amount of oxygen bearin compounds as by-products.

MATERIALS-HANDLING EQUIPMENT
THAT SPEEDS WORK, SPARES MEN, SLASHES COSTS

No other Mobile Crane of this type has all the features of ***KRANE KAR***. More goes into ***KRANE KAR*** . . . you get more out of ***KRANE KAR*** . . . more speed, more work, more safety. Loads and Unloads freight cars, trucks, trailers . . . Stacks and Stores . . . expedites Plant Maintenance.

KRANE KAR handles steel stock and forms of any shape or size within capacity (or scrap when equipped with magnet); transmission cases, motors, crankcases, transformers, etc. Works in tight quarters, low headroom, up and down ramps . . . anywhere, in plant or yard. Often cuts handling costs to 8¢ a ton.*

Safest Crane in its class, minimizing injury risks to men, materials, machine. ***Self-Stabilizing:*** dangerous use of jacks or stabilizers eliminated. ***Automatic Power Cut-Off*** at extreme positions of Boom-Swing or Topping. ***Automatic Braking*** of Load and Boom Lines. ***No Tail-Swing:*** no part of Crane passes over operator's head.

TESTED
5 TON

Gas or Diesel. 9 to 37 ft. booms or adjustable telescopic booms; Electric magnet, clamshell bucket, and other accessories available. Ask for illustrated bulletin #79.

USERS: General Motors, Bethlehem Steel, Boeing, Pullman-Standard, Lima Locomotive, Carnegie-Illinois, U. S. Steel, Basic Magnesium, etc.

***KRANE KAR** will transport any load it can lift—at sides as well as at front.*

THE ORIGINAL SWING-BOOM MOBILE CRANE WITH FRONT-WHEEL DRIVE AND REAR-WHEEL STEER
1¼, 2½, 5, AND 10 TON CAPACITIES
KRANE KAR
TRADE MARK REGISTERED
SILENT HOIST & CRANE CO., 851 63rd ST., B'KLYN 20, N.Y.

ACHINE TOOLS

. . . News and Market Activities

Market Continues Spotty; Little Change Seen in Near Future

Available Business Stems From Defense Program and ECA Sources

° ° °

• **Reports from** major sales
tors this week promised little
any change in the spotty char-
ter of the machine tool market
ttern, which, in brief, is a feast
a few and a famine for many.
New firm orders were down dur-
October and preliminary re-
rts suggest that November or-
rs may reach still lower levels,
of which scarcely add up to
commended bedtime reading for
st segments of the machine tool
dustry. The gloom is growing.
There is a small amount of ma-
ine tool business available, pri-
rily from defense program and
A sources, both of which are
out as definite as an opinion
ll on a Chinese election. Some
fense business and some ECA
ders are already in the bag, but
the machine tool industry is to
the volume it needs, both pro-
ams must achieve their top po-
tial. For ECA, this has been
imated to be about $126 million.
e defense program is almost
body's guess.

Domestic business is in the dol-
ums. Cancellations, postpone-
nts, and other devices, which
enough to sink a sales man-
er's heart down to the vicinity
his left ankle, are turning up
every side. On the other hand,
nts having some appropriation
ney to clean up, or other money
ich must either be spent or go
taxes, are buying some equip-
nt. It is redundant to add that
h plants are in the minority.

Competition is steadily achiev-
the postwar proportions pre-
ted by machine tool builders at
time of the surplus machine
l hearings in 1945. For govern-
nt business, there is always the
tter of bids. At the same time,
used machinery market is giv-
producers of new machines
nty of trouble. The price dif-
entials are rather broad, and
business outlook reportedly
certain, which is enough in cer-
n cases to turn the tide.

New machine prices are up,
ich will protect the builders on
egotiation on government busi-
s, or, putting it another way,
allow them to be renegotiated on a higher level, but in times of declining demand, cost does not make price, in any industry.

The spottiness of the machine tool business at the moment is rather clearly indicated by the divergence in employment requirement. In one midwestern area, at least one major producer of machine tools has had "help wanted" advertisements in local papers for the past 2 months. Whereas, in another area, less than 300 miles away, men are being laid off by machine tool plants.

It was rumored in Cleveland early this week that New Britain-Gridley Machine Div., the New Britain Machine Co., New Britain, Conn., was negotiating for the purchase of the major share of the stock in Lucas Machine Tool Co., Cleveland, from McDonald & Co., a Cleveland brokerage firm. Consideration involved was thought to be about $1.5 million. Sale was reportedly set for Dec. 1. Lucas Machine Tool Co. moved into a new plant in July, 1947, having sold its former plant to permit completion of a new freeway.

In Detroit, there is little change in the amount of machine tool ordering, although the interest of auto makers in the latest types of machine tools continues to be evident enough. Requests for quotations continue to come in and engineering departments are busying themselves refiguring, in a number of instances, programs that have previously been dropped and are now being revived, temporarily at least.

INDEX OF NEW ORDERS AND SHIPMENTS OF MACHINE TOOLS

Base—Average Shipments 1945-1946-1947 = 100%

Date	New Orders (Total)	Foreign Orders (Included in) (Total)	Shipments (Total)	Ratio Unfilled Orders to Shipments (As Reported)
1946				
Jan.	115.6	44.3	105.9	6.4–1
Feb.	79.8	24.0	94.2	7.0–1
Mar.	106.3	26.8	95.2	7.0–1
Apr.	123.4	25.3	99.0	7.0–1
May	107.9	24.1	94.2	7.4–1
June	109.1	35.7	99.8	7.1–1
July	99.0	29.3	78.3	9.0–1
Aug.	99.9	22.4	92.5	7.5–1
Sept.	86.4	18.3	87.5	7.8–1
Oct.	85.3	22.1	99.9	6.7–1
Nov.	73.2	24.5	90.4	7.1–1
Dec.	72.7	21.8	95.2	6.5–1
1947				
Jan.	71.7	21.0	91.7	6.4–1
Feb.	63.8	15.8	92.4	6.0–1
Mar.	74.3	20.1	100.4	5.2–1
Apr.	69.8	18.8	93.3	5.3–1
May	76.9	16.3	89.2	5.2–1
June	90.9	17.2	84.1	5.5–1
July	81.1	16.7	65.2	7.4–1
Aug.	62.1	14.6	63.6	7.5–1
Sept.	63.7	14.7	77.0	5.9–1
Oct.	81.0	16.0	94.8	4.6–1
Nov.	75.6	11.5	84.7	5.1–1
Dec.	81.1	14.8	98.4	4.1–1
1948				
Jan.	83.1	14.0	75.3	5.4–1
Feb.	77.3	12.7	87.1	4.7–1
Mar.	86.3	16.1	83.6	4.6–1
Apr.	86.3	14.1	82.0	4.7–1
May	73.5	11.4	82.6	4.5–1
June	83.4	11.9	94.4	3.8–1
July	74.0	13.3	62.4	5.9–1
Aug.	73.7	13.6	69.8	5.2–1
Sept.	73.1	11.6	84.7	4.2–1
Oct.	p 67.5	p 14.0	p 80.5	p 4.2–1

p – Preliminary figures

Bidding Heavy for Limited Available Tonnage of Scrap Met

New York

• • • **There were no** further price changes in major nonferrous metals or secondary ingots last week. There were, however, further increases in refineries and dealers buying prices for copper scrap grades.

Critical shortages of copper, lead, zinc and aluminum continue unchanged, accompanied by heavy bidding for the limited tonnages of metals scrap available.

Strikes were still in progress early this week at the Utah Mine of Kennecott Copper Co. and two zinc producing plants of American Zinc, Lead & Smelting Co. Latest reports from both companies fail to indicate any prospect for early settlements.

Despite the strikes and the current serious impact of the shortages on domestic consumers, it is learned that the government is still going ahead with its program of acquiring metal for the strategic stockpiles. There was a rumor in the trade that because of the Kennecott strike there would be some easing in copper objectives, but a careful check of all factors in the market fails to confirm this development. According to informed sources the minimum copper objective remains unchanged at 10,000 tons a month.

During the week action was taken by the government to transfer the entire OMR zinc reserve of some 20,000 tons of High Grade to the strategic stockpile. There was about 1000 tons of Prime Western also transferred. This means that consumers will no longer be able to supplement the tonnages obtained from producers with zinc

Government Will Continue Its Stockpiling Drive Despite The Critical Shortage

° ° °

held by the Dept. of Commerce. In recent months it had been increasingly difficult to obtain any zinc from OMR stocks but cases of real hardship had been relieved to some extent in the past.

Lead stockpiling goes on to the extent of 15 pct of domestic production. Producers and consumers are somewhat bitter about this because of the case made out to prove it unnecessary for rearmament purposes.

Monthly Average Prices

• • • **The average prices of the major nonferrous metals in November based on quotations appearing in The Iron Age, were as follows:**

	Cents Per Pound
Electrolytic copper, Conn. Valley	23.50
Lake copper, Conn. Valley	23.625
Straits tin, New York	$1.03
Zinc, East St. Louis	16.62
Zinc, New York	17.27
Lead, St. Louis	21.30
Lead, New York	21.50

Gray market prices are reported by responsible sources well above primary metal prices for copper, lead and zinc. The shortages caused by strikes, stockpiling and exports in the face of unprecedented demand are bound to bring this about, particularly when the
tonnage of scrap sold to consu
ers is higher than domestic mi
production.

Nonferrous Metals Prices

	Nov. 24	Nov. 26	Nov. 27	Nov. 29	Nov. 30
Copper, electro, Conn.	23.50	23.50	23.50	23.50	23.50
Copper, Lake, Conn.	23.625	23.625	23.625	23.625	23.625
Tin, Straits, New York	$1.03	$1.03	$1.03	$1.03	$1.03
Zinc, East St. Louis	17.50	17.50	17.50	17.50	17.50
Lead, St. Louis	21.30	21.30	21.30	21.30	21.30

Copper is reported to have se
in the gray market as high as 2
per lb. When copper scrap is
liably reported purchased in to
nage at prices of 22¢ and 23¢
lb, it is obvious that the abo
market copper price involves r
resentative tonnages. Very lit
copper is available to the op
market at the current domes
price level, in view of the Ken
cott strike. This fact limits
number of producers who wo
be in a logical position to
nounce a new higher price
copper. And in addition all ma
factors in the metals market
leaning over backward to av
the onus of leadership in anoth
price advance. Most observers f
that the next price increase tak
generally in copper, lead or z
would bring about governme
price control over metals, coup
with allocations.

Foreign lead is being sold
this market as high as 26¢ per
Lead scrap is being bought
dealers as high as 21¢. At t
level it is clear that seconda
lead is priced well above the m
ket of 21.5¢. In this market scr
copper and lead is being boug
heavily by consumers for delive
to refineries for conversion on
toll basis. Custom smelters a
refineries cannot compete w
other scrap buyers and still p
duce metal at domestic mar
prices.

•

Kaiser Ingot, Pig F.O.B.

New York

• • • **Pig and ingot** aluminum s
by the Permanente Metals Co
was placed on an f.o.b. mill ba
early this month. This act
raises the cost of Kaiser pig
ingot by the amount of transp
tation charges and taxes betw
Tacoma or Spokane, Wash. and
consumer's plant.

Primary Metals

ents per lb, unless otherwise noted)

minum, 99+%, 10,000 lb, freight lowed	17.00
minum pig	16.00
imony, American, Laredo, Tex.	38.50
yllium copper, 3.75-4.25% Be ollars per lb contained Be	$24.50
yllium aluminum 5% Be, dollars er lb contained Be	$52.00
mium, del'd	$2.00
alt, 97-99% (per lb)	$1.65 to $1.72
per electro, Conn. Valley	23.50
per, lake, Conn. Valley	23.625
l, U. S. Treas., dollars per oz.	$35.00
um, 99.8%, dollars per troy oz.	$2.25
ium, dollars per troy oz.	$110 to $115
d, St. Louis	21.30
d, New York	21.50
nesium, 99.8+%, f.o.b. Freeport, ex.	20.50
nesium, sticks, carlots	34.50
cury, dollars per 76-lb flask, o.b. New York	$79 to $81
kel, electro, f.o.b. New York	42.90
adium, dollars per troy oz.	$24.00
inum, dollars per troy oz.	$93 to $96
er, New York, cents per oz.	70.00
Grade A, New York	$1.03
, East St. Louis	17.50
, New York	18.15
onium copper, 10-12 pct Zr, per contained Zr	$12.00

Remelted Metals

Brass Ingot

ublished prices, cents per lb delivered, carloads)

-5-5 ingot		
o. 115	21.50*	22.00
o. 120	21.00*	21.50
o. 123	20.50*	21.00
0-10 ingot		
o. 305	....	27.25
o. 315	....	24.25
0-2 ingot		
o. 210	....	33.00
o. 215	...	31.00
o. 245	25.75*	25.75
ow ingot		
o. 405	17.50*	17.50
ganese bronze		
o. 421	....	23.00

F.o.b. Philadelphia.

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

aluminum-silicon alloys	
30 copper, max.	31.25–31.75
60 copper, max.	30.75–31.25
on alloys (No. 122 type)	26.50–27.00
12 alum. (No. 2 grade)	26.25–26.75
alloy	26.50–27.00
alloy	27.00–27.25
lloy	31.00–31.50
-679	27.25–27.75

Steel deoxidizing aluminum, notch-bar granulated or shot

de 1—95 pct-95½ pct	28.75–29.50
de 2—92 pct-95 pct	27.75–28.50
de 3—90 pct-92 pct	26.75–27.50
de 4—85 pct-90 pct	26.25–26.75

Electroplating Supplies

des

(Cents per lb, freight allowed, in 500 lb lots)

per	
ast, oval, 15 in. or longer	40⅛
ectrodeposited	34⅜
olled, oval, straight, delivered	37.34
all anodes	38⅜
ss, 80-20	
ast, oval, 15 in. or longer	35⅞
, oval, 99.99	
all anodes	
kel 99 pct plus	
ast	59.00
olled, depolarized	
mium	$2.10
er 999 fine, rolled, 100 oz. lots, er troy oz, f.o.b. Bridgeport, onn.	79

micals

(Cents per lb, f.o.b. shipping point)

per cyanide, 100 lb drum	46.00
per sulfate, 99.5 crystals, bbls.	9.10
kel salts, single or double, 100 lb gs, frt. allowed	18.50
kel chloride, 300 lb bbl.	24.50
er cyanide, 100 oz. lots, per oz.	59
um cyanide, 96 pct domestic 0 lb drums	16.00
sulfate, crystals, 22.5 pct, bags	
sulfate, 25 pct, granules, bbls. t. allowed	

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.082 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 23.8¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4; 35.1¢ to 66¢; 11 to 13, 36.1¢ to 78¢; 23 to 25, 38.2¢ to $1.07; 35 to 37, 45.7¢ to $1.65; 47 to 49, 67.5¢ to $2.41.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 34¢ to 30.5¢; Cold-finished, 0.375 to 3.5 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, ⅛ to 11/32 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished, ⅜ to 1½ in., 11S-T3, 37.5¢ to 35.5¢; ⅜ to 2 in., R317-T4, 36.5¢ to 33.5¢; rolled, 1 9/16 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2⅛ to 3⅜ in., R317-T4, 32.5¢ to 31.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 34¢; 75S-T6, 76¢ to 55¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed Base quantity 30,000 lb)

Sheet and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam. in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher.

Extruded Square, Hex. Bar: M, size across flats, in., ¼ to 0.311, 61¢; ½ to 0.749, 48¢; 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangles: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb. per ft. per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢. 0.065 to 0.082, ⅜ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢. 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and shapes		
Hot-rolled	56	45
Cold-drawn	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks	..	40

Copper, Brass, Bronze

(Cents per pound, freight prepaid on 200 lb)

	Extruded Shapes	Rods	Sheets
Copper	36.78	....	37.18
Copper, hot-rolled	....	33.03	....
Copper, drawn	....	34.28	....
Low brass	38.57*	35.35	35.66
Yellow brass	37.60*	34.28	34.59
Red brass	38.92*	35.70	36.01
Naval brass	34.90	33.65	39.59
Leaded brass	....	29.24	....
Commercial bronze	39.54*	36.57	36.88
Manganese bronze	38.49	36.99	43.09
Phosphor bronze, 5 pct	57.80*	56.30	56.05
Muntz metal	34.47	33.22	37.66
Everdur, Herculoy, Olympic, etc.	40.49	40.76	41.82
Nickel silver 10 pct	....	47.17	44.77
Architectural bronze	33.42	....	....

* Seamless tubing.

Scrap Metals

Brass Mill Scrap

(Cents per pound; add ½¢ per lb for shipments of 20,000 lb or more)

	Heavy	Turnings
Copper	21¼	20¾
Yellow brass	18⅞	18⅛
Red brass	20	19¼
Commercial bronze	20⅛	19⅜
Manganese bronze	18¾	17⅞
Leaded brass rod ends	18⅛	

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery.)

No. 1 copper wire	21.75–22.00
No. 2 copper wire	20.75–21.00
Light copper	19.75–20.00
Refinery brass	19.00–19.25

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer.)

No. 1 copper, wire	19.75
No. 2 copper, wire	18.75
Light copper	17.75
No. 1 composition	16.75–17.00
No. 1 comp. turnings	16.50–16.75
Rolled brass	13.00–13.50
Brass pipe	13.25–13.75
Radiators	14.00
Heavy yellow brass	12.50–12.75
Aluminum	
Mixed old cast	16.50
Mixed old clips	16.75
Mixed turnings, dry	14.50
Pots and pans	16.75
Low copper	19.00

Dealers' Scrap

(Dealer's buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	19½—20
No. 2 heavy copper and wire	18½—19
Light copper	17½—18
Auto radiators (unsweated)	12¾—13
No. 1 composition	15 —15½
No. 1 composition turnings	14½—15
Clean red car boxes	12½—13
Cocks and faucets	12½—13
Mixed heavy yellow brass	9½—10
Old rolled brass	12 —12½
Brass pipe	13 —13½
New soft brass clippings	15 —15½
Brass rod ends	13 —13½
No. 1 brass rod turnings	12½—13

Aluminum

Alum. pistons and struts	8½— 9
Aluminum crankcases	12½—13
2S aluminum clippings	16½—17
Old sheet & utensils	12½—13
Borings and turnings	6 — 6½
Misc. cast aluminum	12½—13
Rural clips (24S)	12½—13

Zinc

New zinc clippings	11½—12
Old zinc	10 —10½
Zinc routings	5¾— 6¼
Old die cast scrap	6¾— 7¼

Nickel and Monel

Pure nickel clippings	22 —23
Clean nickel turnings	17 —18
Nickel anodes	22 —23
Nickel rod ends	21 —22
New Monel clippings	15½—16½
Clean Monel turnings	11 —12
Old sheet Monel	13 —14
Old Monel castings	10 —11
Inconel clippings	12 —13
Nickel silver clippings, mixed	8 — 8½
Nickel silver turnings, mixed	7 — 7½

Lead

Soft scrap lead	20 —20½
Battery plates (dry)	13 —13½

Magnesium Alloys

Segregated solids	8 — 9
Castings	4½— 5½

Miscellaneous

Block tin	82 —84
No. 1 pewter	65 —67
No. 1 auto babbitt	51 —53
Mixed common babbitt	20 —20½
Solder joints	22½—23½
Siphon tops	50 —52
Small foundry type	21½—22
Monotype	20½—21
Lino. and stereotype	20 —20½
Electrotype	18½—19
New type shell cuttings	16½—17
Hand picked type shells	7½— 8
Lino. and stereo dross	11½—12
Electro dross	8 —8½

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Max Schlossberg Co.
IRON & STEEL SCRAP
ALUMINUM & NON-FERROUS SCRAP

GENERAL OFFICES
33 North LaSalle Street, Chicago, Ill.
Telephone: Franklin 2-0380

ailroads Return to Earmarked Sales

w York

• • The market remained firm
current price levels again this
ek. Shipments moved in good
lume and mills accepted all the
od scrap they could get. There
re a few scattered price
anges. But major event of the
ek was the decision of the rail-
ads to resume selling heavy
elting on an earmarked or al-
cated basis.

New York Central R. R. aban-
med this historic practice some
nths ago. Last week three other
ilroads followed suit in the Chi-
go area. Even then reliable
urces predicted that this move
uld be short lived—it was.
is week they were back in the
ld again selling their heavy
elting on an allocated basis.

Price changes which took place
curred in Philadelphia where
w phos bundles dropped $1 to
at $47 to $48; in Boston where
. 2 machinery cast dropped $2,
lling at $57 to $58, and mixed
rings and turnings advanced
¢ to $29.40 to $31; and in Pitts-
rgh where mixed yard cast
mped $1 and sold for $65 to $66.

The overall cast grade picture
mains inconsistent. Some areas
e experiencing seasonal weak-
ss, others are spotty while the
rmingham market remains firm
the highest quoted prices in the
story of the market.

Rumors of over-the-market sales
om various areas continue to
rculate. This condition coupled
th record-breaking ingot oper-
ing rates lends a general firm-
ss and strength to the heavy
elting market.

•

ITTSBURGH—A slight touch of snow
this area and worse conditions else-
ere leads some sources to look for
ength in the market. Countering this
those who have a wait-and-see atti-
le on demand next year. The result is
tand-off with no change in the steady
e of the local market. Mixed yard
t iron scrap was $1 stronger, quotable
$65 to $66. This strength is a reflec-
n of stiffer demand in the South and
ewhere because foundries here have
been pushing hard for cast grades.
th the settlement of the shipping strike,
out 40,000 tons of German scrap is now
ginning to move to Carnegie Illinois
nts here. Mill inventories are still reported to be substantially better today than they were at this time last year.

•

CHICAGO—Last week's decision by some railroads to sell their heavy melting on a free market basis didn't last long. Brokers who bid on this scrap were called back and told that some mills had advanced a little conversation on this subject to the roads and that the roads had decided to reconsider. Thus we are back where we started—railroad heavy melting prices are again half slave and half free. Observers claim that the excitement started when Inland raised rail prices. The roads got hot, assumed all the mills would follow, decided that they were going to get top dollar for their scrap. When they found that other mills did not follow Inland's price raise they cooled off. Regular railroad heavy melting scrap at $37.95 a net ton on track, market price is of course a bargain as other roads selling mixed scrap get $39 a net ton. This scrap includes everything from miscellaneous cast to the dining car sink. Otherwise the scrap market remains steady. Mills are not placing large orders. Inventories are good. Quality has steadily improved. Springboards are out with the regular mills except on earmarked tonnages. In the conversion market premiums for scrap, or kickbacks in products still goes on. Bundles and turnings for the first time in months appear to be somewhat weak.

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PHILADELPHIA—Mills are still fairly comfortable in this market and buying pressure is off but scrap is not too plentiful in the yards. Western mills are largely out of the market on scrap for conversion purposes, no longer finding it necessary to pay the freight to Pittsburgh or Cleveland. Only one mill here is still in the No. 1 market and rejections have been heavy for overgraded material. The return to work of the Midvale Co. has market factors speculating on its impact on the scrap market. There is little demand for low phos bundles and prices are quoted $1 lower. Pipe foundries are well supplied with cast and other foundries are growing much fussier about cast quality. Some have been rejecting. Other grades were unchanged.

•

CLEVELAND—Apart from an offering of 200 tons of unprepared No. 2 steel which brought a reported $44, the market here and in the Valley is quiet but holding. Demand for steel foundry and cast grades is seasonally off. Blast furnace grades are weak and only openhearth demand continues unabated. Shipments are off this week, but the market generally shows more life than it did last month, which was pretty quiet. The freight car shortage has been relieved to a large extent, although shippers still strike an occasional snag. Railroad lists are scheduled to close Thursday, and will probably provide some sort of a test of market strength.

DETROIT—With Detroit buyers of most grades of scrap reported to be in a comfortable scrap position, there have been no significant developments here during the past week. Buying of openhearth grades continues at formula levels. Cast grades are holding despite spotty activity, by Detroit foundries. It is reported that a number of foundries not participating in current die work for Fisher, Chrysler, Briggs and Packard are operating considerably below capacity. Despite reduced scrap buying by foundry users, prices of machinery and mixed yard scrap appear to be holding firm. No price changes this week.

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CINCINNATI — Little change was evident in the market here this week, although Portsmouth Steel Corp. is out of the market and comfortable for the time being. Foundries, steel and gray iron, are not buying temporarily, all of which adds up to a rather quiet market. Openhearth grades are in top demand, and shipments are fairly good, although major consumers could use more. Aside from the sale of an occasional car, specialty grades are soft.

•

NEW YORK—The market continues firm at current price levels. Shipments are moving in fair volume, but there is some show of indifference by mills in some quarters. Generally, however, they are still taking all they can get at market prices. The longshoremen's strike had little or no effect on the New York market. It did, however, hold up some shipments of foreign scrap in other areas. Clean cast chemical borings for chemical purposes are still out of the market and will continue to be so until after the end of the year. Any price quoted is nominal. Prices quoted in THE IRON AGE for this material is always on the basis of use for chemical purposes.

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BIRMINGHAM — Although cast iron prices have reached an all-time high in this market, no substantial increase in receipts is evident. Mills have good inventories of steel scrap and currently are placing few orders. However, there is no price weakness for any grade.

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BOSTON—There is a little more activity here but the volume of business is still far from good, according to brokers. The only significant price change is a drop in No. 2 machinery cast from $59 to $60, down about $2 to $57 to $58. Machine shop turnings and mixed borings and turnings sell for between $29.40 and $31.

•

BUFFALO—Open market prices on borings and turnings ballooned last week, with shovelings being bid up $2 or so and the other stuff tagging along. Secrecy surrounded details of the business, giving rise to speculation that converters had turned their attentions to blast furnace scrap in a big way. One leading dealer quoted shoveling turnings $41 to $42, and cast iron borings, machine shop, and mixed turnings and borings, $39 to $40.

IRON AND STEEL SCRAP PRICES

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.50 to	$43.00
RR. hvy. melting	43.50 to	44.00
No. 2 hvy. melting	42.50 to	43.00
RR. scrap rails	58.00 to	59.00
Rails 2 ft and under	62.00 to	62.50
No. 1 comp'd bundles	42.50 to	43.00
Hand bdld. new shts.	42.50 to	43.00
Hvy. axle turn.	45.50 to	46.50
Hvy. steel forge turn.	45.50 to	46.50
Mach. shop turn.	37.50 to	38.00
Shoveling turn.	39.00 to	40.00
Mixed bor. and turn.	37.50 to	38.00
Cast iron borings	39.50 to	40.00
No. 1 mach. cast	69.50 to	70.50
Mixed yard cast	65.00 to	66.00
Hvy. breakable cast.	61.00 to	62.00
Malleable	76.00 to	77.00
RR. knuck. and cup.	57.00 to	58.00
RR. coil springs	58.50 to	59.50
RR. leaf springs	58.50 to	59.50
Rolled steel wheels	57.00 to	58.00
Low phos.	49.00 to	50.00

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$41.50 to	$42.00
No. 2 hvy. melting	41.50 to	42.00
No. 1 bundles	41.50 to	42.00
No. 2 dealers' bundles	41.50 to	42.00
Bundled mach. shop turn.	41.50 to	42.00
Galv. bundles	39.50 to	40.00
Mach. shop turn.	36.50 to	37.00
Short shov. turn.	38.50 to	39.00
Cast iron borings	37.50 to	38.00
Mix. borings and turn.	36.50 to	37.00
Low phos. hvy. forge	51.00 to	52.00
Low phos. plates	49.00 to	50.00
No. 1 RR. hvy. melt.	44.25 to	50.00
Rerolling rails	71.00 to	73.00
Miscellaneous rails	65.00 to	66.00
Angles & splice bars	58.00 to	59.00
Locomotive tires, cut	59.00 to	60.00
Cut bolster & side frames	52.00 to	55.00
Standard stl. car axles	83.00 to	85.00
No. 3 steel wheels	53.00 to	54.00
Couplers and knuckles	54.00 to	55.00
Rails, 2 ft and under	62.50 to	65.00
Malleable	83.00 to	84.00
No. 1 mach. cast.	72.00 to	73.00
No. 1 agricul. cast.	63.00 to	64.00
Heavy breakable cast.	62.00 to	64.00
RR. grate bars	60.00 to	64.00
Cast iron brake shoes	60.00 to	61.00
Cast iron car wheels	65.00 to	66.00

CINCINNATI

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$40.00 to	$41.00
No. 2 hvy. melting	40.00 to	41.00
No. 1 bundles	40.00 to	41.00
No. 2 bundles	40.00 to	41.00
Mach. shop turn.	35.00 to	36.00
Shoveling turn.	37.00 to	38.00
Cast iron borings	36.00 to	37.00
Mixed bor. & turn.	35.00 to	36.00
Low phos., 18 in. under	48.00 to	49.00
No. 1 cupola cast.	65.00 to	66.00
Hvy breakable cast	59.00 to	60.00
Rails 18 in. and under	61.00 to	63.00
Rails random length	56.00 to	57.00
Drop broken	69.00 to	70.00

BOSTON

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$34.40 to	$38.50
No. 2 hvy. melting	....	34.40
Nos. 1 and 2 bundles	....	34.40
Bushelings	....	34.40
Shoveling turn.	....	31.40
Machine shop turn.	29.40 to	31.00
Mixed bor. and turn.	29.40 to	31.00
Cl'n cast chem. bor.	37.50 to	38.50
No. 1 machinery cast.	64.00 to	65.00
No. 2 machinery cast.	57.00 to	59.00
Heavy breakable cast.	53.50 to	54.50
Stove plate	56.00 to	57.00

DETROIT

Per gross ton, brokers' buying prices f.o.b. cars:

No. 1 hvy. melting	....	$38.00
No. 2 hvy. melting	....	38.00
No. 1 bundles	....	38.00
New busheling	....	38.00
Flashings	....	38.00
Mach. shop turn.	$32.50 to	33.00
Machinery cast	63.00 to	65.00
Mixed yard cast	57.00 to	58.00
Shoveling turn.	34.50 to	35.00
Cast iron borings	33.50 to	34.00
Mixed bor. & turn.	34.50 to	35.00
Low phos. plate	42.50 to	43.00
Heavy breakable cast.	53.00 to	57.00
Stove plate	57.00 to	58.00
Automotive cast.	64.00 to	66.00

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$44.00 to	$45.00
No. 2 hvy. melting	41.00 to	41.50
No. 1 bundles	44.00 to	45.00
No. 2 bundles	41.00 to	41.50
Mach. shop turn.	37.00 to	38.00
Shoveling turn.	39.00 to	39.50
Mixed bor. and turn.	36.75 to	37.25
Clean cast chemical bor.	42.00 to	43.00
No. 1 machinery cast.	66.00 to	67.00
No. 1 mixed yard cast.	61.00 to	62.00
Hvy. breakable cast.	62.00 to	63.00
Clean auto cast.	65.00 to	66.00
Hvy. axle forge turn.	46.00 to	47.00
Low phos. acid, openhearth	49.00 to	50.00
Low phos., electric furnace	51.00 to	52.00
Low phos. bundles	47.00 to	48.00
RR. steel wheels	54.00 to	55.00
RR. coil springs	54.00 to	55.00
RR. malleable	80.00 to	82.00
Cast iron carwheels	68.00 to	70.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$44.00 to	$45.00
No. 2 hvy. melting	40.00 to	41.00
Bundled sheets	40.00 to	41.00
Mach. shop turn.	35.00 to	36.00
Shoveling turnings	37.00 to	38.00
Locomotive tires, uncut	47.00 to	48.00
Mis. std. sec. rails	57.00 to	58.00
Steel angle bars	55.00 to	57.00
Rails 3 ft and under	60.00 to	62.00
RR. steel springs	50.00 to	51.00
Steel car axles	73.00 to	75.00
Brake shoes	59.00 to	60.00
Malleable	77.00 to	78.00
Cast iron car wheels	65.00 to	66.00
No. 1 machinery cast.	66.00 to	67.00
Hvy. breakable cast.	61.00 to	62.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	....	$40.00
No. 2 hvy. melting	....	40.00
No. 2 bundles	....	40.00
No. 1 bunsheling	....	40.00
Long turnings	$32.00 to	33.00
Shoveling turnings	35.00 to	36.00
Cast iron borings	....	29.50
Bar crops and plate	44.00 to	45.00
Structural and plate	44.00 to	45.00
No. 1 cupola cast.	71.00 to	73.00
Stove plate	65.00 to	67.00
No. 1 RR. hvy. melt.	....	41.00
Steel axles	51.00 to	52.00
Scrap rails	44.00 to	45.00
Rerolling rails	65.00 to	67.00
Angles & splice bars	53.00 to	54.00
Rails 3 ft & under	53.00 to	54.00
Cast iron carwheels	63.00 to	64.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.50 to	$43.00
No. 2 hvy. melting	42.50 to	43.00
Mach. shop turn.	37.50 to	38.00
Short shov. turn.	39.00 to	40.00
Cast iron borings	38.00 to	39.00
Low phos.	47.50 to	48.00

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$38.50 to	$39.00
No. 2 hvy. melting	....	37.00
No. 2 bundles	....	37.00
Mach. shop turn.	31.50 to	32.00
Mixed bor. & turn.	31.50 to	32.00
Shoveling turnings	33.50 to	34.00
Machinery cast.	59.00 to	60.00
Mixed yard cast	57.00 to	58.00
Heavy breakable cast.	56.00 to	57.00
Charging box cast.	56.00 to	57.00
Unstrp. motor blks.	53.50 to	54.50
Cl'n cast chem. bor.	38.00 to	39.00

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$47.00 to	$49.
No. 2 hvy. melting	41.75 to	42.
No. 1 bundles	41.75 to	42.
No. 2 bundles	41.75 to	42.
No. 1 busheling	41.75 to	42.
Mach. shop turn.	36.75 to	37.
Shoveling turn.	38.75 to	39.
Cast iron borings	37.75 to	38.
Mixed bor. and turn.	36.75 to	37.
Clean auto. cast.	69.00 to	70.
Mixed cupola cast.	66.00 to	68.
Stove plate	66.00 to	68.
RR. malleable	70.00 to	75.
Small indus. malleable	47.00 to	49.
Low phos. plate	48.00 to	50.
Scrap rails	....	58.
Rails 3 ft & under	63.00 to	64.
RR. steel wheels	56.00 to	58.
RR. coil & leaf spgs.	56.00 to	58.
RR. knuckles & coup.	56.00 to	58.

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.00 to	$42.
No. 2 hvy. melting	42.00 to	42
No. 1 bundles	42.00 to	42
No. 1 busheling	42.00 to	42
Drop forge flashings	42.00 to	42
Mach. shop turn.	37.00 to	37
Shoveling turn.	38.50 to	39
Steel axle turn.	42.00 to	42
Cast iron borings	37.50 to	38
Mixed bor. & turn.	36.50 to	37
Low phos. 2 ft and under	47.00 to	47
No. 1 machinery cast.	73.00 to	75
Malleable	79.00 to	81
RR. cast.	76.00 to	78
Railroad grate bars	60.00 to	62
Stove plate	61.00 to	63
RR. hvy. melting	43.00 to	43
Rails 3 ft and under	63.50 to	64
Rails 18 in. and under	65.00 to	66

SAN FRANCISCO

Per gross ton, f.o.b. shipping point:

No. 1 hvy. melting	....	$27
No. 2 hvy. melting	....	27
No. 2 bales	....	27
No. 3 bales	....	24
Mach. shop turn.	....	18
Elec. fur. 1 ft under	$40.00 to	42
No. 1 cupola cast.	58.00 to	60
RR. hvy. melting	....	28
Rails	....	29

LOS ANGELES

Per gross ton, f.o.b. shipping point:

No. 1 hvy. melting	....	$27
No. 2 hvy. melting	....	27
No. 1 bales	....	27
No. 2 bales	....	27
No. 3 bales	....	24
Mach. shop turn.	....	20
Elec. fur. 1 ft under	$40.00 to	42
No. 1 cupola cast.	58.00 to	68
RR. hvy. melting	....	28

SEATTLE

Per gross ton delivered to consumer:

No. 1 & No. 2 hvy. melt.	$27.50 to	$30
Elec. fur. 1 ft and under	40.00 to	42
No. 1 cupola cast.	50.00 to	54
RR. hvy. melting	30.00 to	33

HAMILTON, ONT.

Per gross ton delivered to consumer:
Cast grades f.o.b. shipping point:

Heavy melting		$23.
No. 1 bundles		23.
No. 2 bundles		22.
Mechanical bundles		21.
Mixed steel scrap		19.
Mixed borings and turnings		17.
Rails, remelting		23.
Rails, rerolling		26.
Bushelings		17.
Bushelings, new fact, prop'd		21.
Bushelings, new fact, unprop'd		16.
Short steel turnings		17.
No. 1 cast	$48.00 to	50
No. 2 cast	44.00 to	45

*Ceiling Price

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices . .

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

	Nov. 30, 1948	Nov. 23, 1948	Nov. 2, 1948	Dec. 2, 1947
Flat-Rolled Steel: (cents per pound)				
Hot-rolled sheets	3.26	3.26	3.26	2.80
Cold-rolled sheets	4.00	4.00	4.00	3.55
Galvanized sheets (10 ga)	4.40	4.40	4.40	3.95
Hot-rolled strip	3.265	3.265	3.265	2.80
Cold-rolled strip	4.063	4.063	4.063	3.55
Plates	3.42	3.42	3.42	2.95
Plates wrought iron	7.85	7.85	7.85	6.85
Stains C-R strip (No. 302)	33.25	33.25	33.25	30.50
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes	$6.80	$6.80	$6.80	$5.75
Tinplate, electro (0.50 lb)	6.00	6.00	6.00	5.05
Special coated mfg. ternes	5.90	5.90	5.90	4.90
Bars and Shapes: (cents per pound)				
Merchant bars	3.37	3.37	3.37	2.90
Cold-finished bars	3.995	3.995	3.995	3.55
Alloy bars	3.75	3.75	3.75	3.30
Structural shapes	3.25	3.25	3.25	2.80
Stainless bars (No. 302)	28.50	28.50	28.50	26.00
Wrought iron bars	9.50	9.50	9.50	7.15
Wire: (cents per pound)				
Bright wire	4.256	4.256	4.256	3.55
Rails: (dollars per 100 lb)				
Heavy rails	$3.20	$3.20	$3.20	$2.75
Light rails	3.55	3.55	3.55	3.10
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$52.00	$52.00	$52.00	$45.00†
Slabs, rerolling	52.00	52.00	52.00	45.00†
Forging billets	61.00	61.00	61.00	55.00†
Alloy blooms, billets, slabs	63.00	63.00	63.00	66.00†
Wire rod and Skelp: (cents per pound)				
Wire rods	3.619	3.619	3.619	2.80
Skelp	3.25	3.25	3.25	2.60

† Gross ton

	Nov. 30, 1948	Nov. 23, 1948	Nov. 2, 1948	Dec. 2, 1947
Pig Iron: (per gross ton)				
No. 2, foundry, Phila.	$51.56	$51.56	$51.56	$40.97
No. 2, Valley furnace	46.50	46.50	46.50	36.50
No. 2, Southern Cin'ti	49.47	49.47	49.47	40.24
No. 2, Birmingham	43.38	43.38	43.38	34.88
No. 2, foundry, Chicago†	46.00	46.00	46.00	36.00
Basic del'd Philadelphia	50.76	50.76	50.76	40.47
Basic, Valley furnace	46.00	46.00	46.00	36.00
Malleable, Chicago†	46.50	46.50	46.50	36.50
Malleable, Valley	46.50	46.50	46.50	36.50
Charcoal, Chicago	73.78	73.78	73.78	56.04
Ferromanganese‡	161.71	161.71	161.71	145.00

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† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy page.

	Nov. 30, 1948	Nov. 23, 1948	Nov. 2, 1948	Dec. 2, 1947
Scrap (per gross ton)				
Heavy melt'g steel, P'gh.	$42.75	$42.75	$42.75	$40.00
Heavy melt'g steel, Phila.	44.50	44.50	45.00	42.00
Heavy melt'g steel, Ch'go	41.75	41.75	41.75	38.75
No. 1, hy. comp. sh't, Det.	38.00	38.00	38.00	34.75
Low phos. Young'n	47.75	47.75	47.75	47.25
No. 1, cast, Pittsburgh	70.00	70.00	70.00	53.50
No. 1, cast, Philadelphia	66.50	66.50	66.50	53.50
No. 1, cast, Chicago	72.50	72.50	71.00	52.50
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$15.00	$15.00	$15.00	$12.50
Foundry coke, prompt	17.00	17.00	17.00	14.00
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	23.50	23.50	23.50	21.50
Copper, Lake Conn.	23.625	23.625	23.625	21.625
Tin, Grade A, New York	$1.03	$1.03	$1.03	80.00
Zinc, East St. Louis	17.50	17.50	15.50	10.50
Lead, St. Louis	21.30	21.30	21.30	14.80
Aluminum, virgin	17.00	17.00	17.00	15.00
Nickel, electrolytic	42.90	42.90	42.90	37.67
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	38.50	38.50	38.50	33.00

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942, and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite price for the current quarter is an estimate based on finished steel shipments for the previous quarter. This figure will be revised when shipments for this quarter are compiled.

	FINISHED STEEL (Base Price)	PIG IRON	SCRAP STEEL
Nov. 30, 1948	3.75628¢ per lb.	$46.82 per gross ton	$43.00 per gross ton
One week ago	3.75628¢ per lb.	$46.82 per gross ton	$43.00 per gross ton
One month ago	3.75628¢ per lb.	$46.82 per gross ton	$43.16 per gross ton
One year ago	3.19541¢ per lb.	$37.06 per gross ton	$40.25 per gross ton

	FINISHED STEEL HIGH	FINISHED STEEL LOW	PIG IRON HIGH	PIG IRON LOW	SCRAP STEEL HIGH	SCRAP STEEL LOW
1948	3.75700¢ July 27	3.22566¢ Jan. 1	$46.82 Oct. 12	$39.58 Jan. 6	$43.16 July 27	$39.75 Mar.
1947	3.19541¢ Oct. 7	2.87118¢ Jan. 7	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May
1946	2.83599¢ Dec. 31	2.54490¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan.
1945	2.44104¢ Oct. 2	2.54490¢ Jan. 2	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17 Jan. 11	15.76 Oct.
1943	2.29176¢	2.29176¢	23.61	23.61	$19.17	$19.17
1942	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr.
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr.
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov 5	17.83 May 14	13.42 Dec. 10	10.33 Apr.
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept.
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan.
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec.
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9	18.21 Jan. 7	15.90 Dec. 16	15.00 Feb. 18	11.25 Dec.
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec.

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy meltin steel scrap quotations to consumer at Pittsburgh, Philadelphia and Chicago.

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. producing points in cents per pound unless otherwise indicated. Extras apply. (1) Commercial quality sheet grade; prices, 0.25¢ above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Cokes, 1.25 lb, deduct 20¢ per base box. (6) 18 gage and heavier. (7) For straight length material only from producers to fabricators. (8) Also shafting. For quantities of 40,000 lb and over. (9) Carload lot in manufacturing trade. (10) Hollowware enameling, gages 29 to 31 only. (11) Produced to dimensional tolerances in AISI Manual Sec. 6. (12) Slab prices subject to negotiation in most cases. (13) San Francisco only. (14) Los Angeles only. (15) San Francisco and Los Angeles only. (16) Seattle only. (17) Seattle and Los Angeles only.

PRODUCTS	Base prices at producing points apply to the sizes and grades produced in these areas														
	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		Detroit	Johnstown	Seattle, S. Frisco, LosAngeles	Fontana
GOTS Carbon forging	$50.00														
Alloy	$51.00						(per net ton)								
LLETS, BLOOMS, SLABS Carbon, rerolling[12]	$52.00				$52.00	$52.00	(per net ton)						$52.00		
Carbon forging billets	$61.00	$61.00	$61.00	$61.00	$61.00	$61.00	(per net ton)						$61.00		
Alloy	$63.00	$63.00				$63.00	(Bethlehem, Canton, Massillon = $63.00) (per net ton)								
PE SKELP	3.25						3.25				Warren =3.25				
RE RODS	3.40 to 4.15	3.40 to 3.90		3.40	3.40		3.65	3.50			Worcester 3.70		3.40	4.05[13] 4.10[14]	
HEETS Hot-rolled[6]	3.25 to 3.30	3.25	3.25	3.25–3.30	3.25	3.25	3.25	3.25		Warren, Ashland =3.25		3.45		3.95[15]	5.65
Cold-rolled[1]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.70	4.00	Warren 4.00	4.20		Pittsburg, Cal. 4.95	
Galvanized (10 gage)	4.40	4.40	4.40		4.40			4.40	Canton =4.40	4.40	Ashland =4.40			5.15[15]	
Enameling (12 gage)	4.40	4.40	4.40	4.40			4.40		4.60	4.40		4.70			
Long ternes[2] (10 gage)	4.80		4.80							4.80					
RIP Hot-rolled[3]	3.25 to 3.30	3.25 to 3.30	3.25	3.25 to 3.30	3.25	3.25	3.25	3.25		3.25	Warren =3.25	3.45		4.00 to 4.25	5.90
Cold-rolled[4]	4.00	4.25		4.00	4.00	4.00	4.00	4.00		New Haven 4.50 Warren=4.00 to 4.25		4.20 to 4.50			7.10
NPLATE Cokes, 1.50 lb.[5] base box	$6.80	$6.80	$6.80		$6.90			$6.90	$7.00	Warren, Ohio =$6.80				Pittsburg, Cal.=$7.55	
Electrolytic 0.25, 0.50, 0.75 lb. box	Deduct $1.00, 80¢ and 60¢ respectively from 1.50 lb. coke base box price														
RNES MFG., special coated	Deduct 90¢ from 1.50 lb. coke base box price														
LACKPLATE CANMAKING 55-70 lb, 75-95 lb, 100-128 lb	Deduct $1.60, $1.70 and $1.60 respectively from 1.50 lb. coke base box price														
LACKPLATE, h.e., 29 ga.[10]	4.75	4.75	4.75					4.85							
RS Carbon Steel	3.35 to 3.55	3.35	3.35	3.35	3.35	3.35	3.35	3.35		3.35	Canton =3.35	3.55	3.35	4.05 to 4.10	5.30
Reinforcing (billet)[7]	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35			Canton =3.35		3.35	4.05 to 4.10	5.30
Cold-finished[8]	3.95 to 4.00	4.00	4.00	4.00		4.00	4.00					4.30			
Alloy, hot-rolled	3.75	3.75	3.75			3.75	3.75	Bethlehem, Canton, Massillon=3.75				4.05	3.75	4.80[14]	5.50
Alloy cold-drawn	4.65 to 4.75	4.65	4.65	4.65		4.65	4.65	Massillon=4.65			Worcester 4.95				
ATE Carbon steel[11]	3.40 to 3.60	3.40	3.40	3.40 to 3.60	3.40 Cons	3.45 hohocken	3.40 =3.95	3.45 Coatesville=3.75, Claymont=3.95 Geneva=3.40, Harrisburg=6.50				3.65	3.45	4.30[16]	5.80
Floor plates	4.55	4.55		4.55				Conshohocken =4.55							
Alloy	4.40	4.40							Coatesville=5.10						
HAPES, Structural	3.25 to 3.30	3.25	3.25		3.25	3.30	Bethlehem=3.30, Geneva, Utah=3.25						3.30	3.85 to 4.30	5.75
ANUFACTURERS' WIRE[9] Bright	4.15 to 4.50	4.15 to 4.65		4.15	4.15		4.15	4.25	Duluth=4.15, Worcester=4.45				4.15	5.15[13]	
Spring (high carbon)	5.20	5.20		5.20				5.30	Worcester=5.50 New Haven, Trenton=5.50				5.20	Duluth= 5.20-6.15	
LING, Steel sheet	4.05	4.05				4.05									

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

	Chromium Nickel						Straight Chromium		
Product	301	302	303	304	316	347	410	416	430
Ingots, rerolling..................	12.75	13.50	15.00	14.50	22.75	20.00	11.25	13.75	11.50
Slabs, billets, rerolling............	17.00	18.25	20.25	19.25	30.25	26.75	15.00	18.50	15.25
Forging discs, die blocks, rings......	30.50	30.50	33.00	32.00	49.00	41.00	24.50	25.00	25.00
Billets, forging....................	24.25- 26.50	24.25- 26.50	26.25- 28.75	25.50- 27.75	39.00- 42.75	32.75- 35.75	19.50- 21.50	20.00- 21.75	20.00- 21.75
Bars, wire, structurals............	28.50	28.50	31.00	30.00	46.00	38.50	23.00	23.50	23.50
Plates...........................	32.00	32.00	34.00	34.00	50.50	44.00	26.00	26.50	26.50
Sheets...........................	37.50- 40.75	37.50- 40.75	39.50- 43.00	39.50- 43.00	53.00- 57.25	50.00- 54.00	33.00	33.50	35.50 .....
Strip, hot-rolled.................	24.25	25.75	30.00	27.75	46.00	38.75	21.25	28.00	21.75
Strip, cold-rolled.................	30.50- 30.75	33.00- 33.50	36.50- 39.50	35.00- 35.75	55.00- 57.25	48.50- 50.00	27.00	33.50	27.50 .....

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diameter in in.	Length in in.	
Graphite		
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	23.00¢
Carbon		
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	90.5¢
18	4	1	—	5	$1.42
18	4	2	—	—	$1.025
1.5	4	1.5	8	—	65¢
6	4	2	6	—	69.5¢

High-carbon-chromium	52¢
Oil harden manganese	29¢
Special carbon	26.5¢
Extra carbon	22¢
Regular carbon	19¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

ELECTRICAL SHEETS

Base, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	5.45
Electrical	5.95
Motor	6.70 to 9.20
Dynamo	7.50 to 10.00
Transformer 72	8.05 to 11.80
Transformer 65	8.60 to 12.35
Transformer 58	9.30 to 13.05
Transformer 52	10.10

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb........	$3.20†
Joint bars, 100 lb	4.25
Light rails (from billets) per 100 lb	3.55

	Base Price cents per lb
Track spikes	5.35
Axles	5.20
Screw spikes	8.00
Tie plates	4.05
Tie plates, Pittsburg, Calif.*.......	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	8.50

*Seattle, add 30¢.

† CF&I $3.35; Inland $3.50.

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢

Worcester, add 0.30¢.

CLAD STEEL

Base prices, cents per pound

Stainless clad	Plate	Sheet
No. 304, 20 pct, f.o.b.		
Coatesville, Pa.	*26.50	
Washington, Pa.	*26.50	*22.50
Claymont, Del.	*26.50	
Conshohocken, Pa....		*22.50
Nickel-clad		
10 pct f.o.b. Coatesville, Pa.	27.50	
Inconel-clad		
10 pct, f.o.b. Coatesville.	36.00	
Monel-clad		
10 pct, f.o.b. Coatesville.	29.00	
Alumnized steel sheets		
Hot dip, 20 gage, f.o.b. Butler, Pa.	....	9.25

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* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Column	*Pittsbur Calif.*
Standard & coated nails*	103	123
Galvanized nails*	103	123
Woven wire fence†	109	132
Fence posts, carloads††..	114	....
Single loop bale ties.....	106	130
Galvanized barbed wire**	123	143
Twisted barbless wire...	123	....

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* Pgh., Chi., Duluth; Worcester, 6 c
umns higher. † 15½ gage and heavi
** On 80 rod spools, in carloads. †† Dulu
only.

	Base per 100 lb	*Pittsbu Calif*
Annealed fence wire‡....	$4.80	$5.75
Annealed, galv. fencing‡.	5.25	6.20
Cut nails, carloads‡‡	6.75	....

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‡ Add 30¢ at Worcester; 10¢ at Sp
rows Pt.

‡‡ Less 20¢ to jobbers.

HIGH STRENGTH, LOW ALLOY STEELS

Mill base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dyn-alloy	Hi Steel	Mayari R	Otis-coloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes Steel
Plates..........	5.20	5.20	5.20	5.30	5.20	5.30	5.20	5.20	5.65
Sheets									
Hot-rolled....	4.95	4.95	4.95	5.25	4.95	4.95	4.95	4.95	5.25
Cold-rolled...	6.05	6.05	6.05	....	6.05	6.05	6.05	6.05	6.35
Galvanized...	....	6.75	....	....	....	6.75	....	....	....
Strip									
Hot-rolled....	4.95	4.95	4.95	....	4.95	4.95	4.95	4.95	5.25
Cold-rolled...	....	....	6.05	....	....	6.05	6.05	....	6.35
Shapes.........	....	4.95	....	....	4.95	5.05	4.95	....	....
Beams.........	....	4.95	....	....	....	....	....	....	....
Bars									
Hot-rolled....	5.10	5.10	5.10	....	5.10	5.10	5.10	....	5.40
Bar shapes.....	....	5.10	....	....	5.10	5.10	5.10	....	....

PIPE AND TUBING

Base discounts, f.o.b. mills,
Base price, $200.00 per net ton.

tandard, threaded and coupled

eel, buttweld	Black	Galv.
-in.	43 to 41	20 to 18
-in.	46 to 44	24 to 22
in.	48½ to 46½	27 to 25
¼-in.	49 to 47	27½ to 25½
½-in.	49½ to 47½	28 to 26
-in.	50 to 48	28½ to 26½
½ to 3-in.	50½ to 49½	29 to 27
eel, lapweld		
-in.	39½	17½
½ to 3 in.	39½	21½
½ to 6 in.	46½ to 42	20½ to 24½
eel, seamless		
-in.	38½ to 27	16½ to 5
½ to 3-in	41½ to 35	19½ to 10½
½ to 6-in.	43½ to 38½	21½ to 16½
rought Iron, buttweld		
-in.	+20½	+52½
-in.	+10½	+41½
& 1¼-in.	+ 4½	+32½
-in.	— 1½	+29
-in.	— 2	+28½
rought Iron, lapweld		
-in.	+ 7½	+36½
½ to 3½-in.	+ 5	+32
-in.	list	+26
½ to 8-in.	+ 2	+27½

xtra Strong, plain ends

teel, buttweld	Black	Galv.
-in.	42 to 40	20½ to 18½
-in.	46 to 44	24½ to 22½
-in.	48 to 46	27½ to 25½
¼-in.	48½ to 46½	28 to 26
½-in.	49 to 47	28½ to 26½
-in.	49½ to 47½	29 to 27
½ to 3-in.	50 to 48	29½ to 27½
teel, lapweld		
-in.	39½	18½
½ to 3-in.	44½	23½
½ to 6-in.	48 to 44	23 to 27
teel, seamless		
-in.	37½ to 32½	16½ to 11½
½ to 3-in.	41½ to 36½	20½ to 15½
½ to 6-in.	45	24
rought Iron, buttweld		
-in.	+16	+46½
-in.	+ 9½	+39½
to 2-in.	— 1½	+28½
rought Iron, lapweld		
-in.	+ 4½	+33
½ to 4-in.	— 5	+21½
½ to 6-in.	— 1	+26

For threads only, buttweld, lapweld and eamless pipe, one point higher discount lower price) applies. For plain ends, uttweld, lapweld and seamless pipe 3-in. nd smaller, three points higher discount lower price) applies, while for lapweld nd seamless 3½-in. and larger four oints higher discount (lower price) applies. On buttweld and lapweld steel pipe, obbers are granted a discount of 5 pct. n l.c.l. shipments, prices are determined y adding 25 pct and 30 pct and the carbad freight rate to the base card.

BOILER TUBES

Seamless steel and electric welded comercial boiler tubes and locomotive tubes, inimum wall. Prices per 100 ft at mill in arload lots, cut length 4 to 24 ft inclusive.

OD	Gage	Seamless		Electric Weld	
in.	BWG	H.R.	C.R.	H.R.	C.D.
2	13	19.18	22.56	18.60	21.89
2½	12	25.79	30.33	25.02	29.41
3	12	28.68	33.76	27.82	32.74
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78

CAST IRON WATER PIPE

	Per net ton
to 24-in., del'd Chicago	$106.70
to 24-in., del'd N. Y.	103.50 to 108.40
to 24-in., Birmingham	93.50
-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	120.30

Class "A" and gas pipe, $5 extra; 4-in. pe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
½ in. & smaller x 6 in. & shorter	35
9/16 & ⅝ in. x 6 in. & shorter	37
¾ in. & larger x 6 in. & shorter	34
All diam, longer than 6 in.	30
Lag, all diam over 6 in. longer	35
Lag, all diam x 6 in. & shorter	37
Plow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	35
9/16 to 1 in. inclusive	34
1⅛ to 1½ in. inclusive	32
1⅝ in. and larger	27

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quentities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts

	USS	SAE
7/16 in. and smaller	..	41
½ in. and smaller	38	..
½ in. through 1 in.	..	39
9/16 in. through 1 in.	37	..
1⅛ in. through 1½ in.	35	37
1⅝ in. and larger	28	..

In full case lots, 15 pct additional discount.

Stove Bolts

Packages, nuts separate	$61.75
In bulk	70.00

Large Rivets

	(½ in. and larger) *Base per 100 lb*
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

	(7/16 in. and smaller) *Pct off List*
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	48

Cap and Set Screws

(In packages)	*Pct Off List*
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	46
¾ to 1 in. x 6 in., SAE (1035), heat treated	35
Set screws, oval points	
Milled studs	19
Flat head cap screws, listed sizes	5
Fillister head cap, listed sizes	28

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill.

Effective CaF, Content:	*Base price per net ton*
70% or more	$37.00
60% or less	34.00

LAKE SUPERIOR ORES

(51.50% *Fe, Natural Content, Delivered Lower Lake Ports)*

	Per Gross Ton
Old range, Bessemer	$6.60
Old range,nonbessemer	6.45
Mesabi, bessemer	6.35
Mesabi, nonbessemer	6.20
High phosphorus	6.20

Increases or decreases in freight rates, dock handling charges and taxes after Apr. 1, 1948, are to be added to above prices.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 *mesh.*

Swedish sponge iron c.i.f. New York, ocean bags	7.9¢ to 9.0¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	19.5¢ to 39.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8%+ Fe	90.0¢ to $1.75
Aluminum	30.00¢
Antimony	51.17¢
Brass, 10 ton lots	27.25 to 37.25¢
Copper, electrolytic	33.625¢
Copper, reduced	34.25¢
Cadmium	$2.55
Chromium, electrolytic, 99% min.	$3.50
Lead	27.80¢
Manganese	55.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	66.00¢
Nickel, spherical, minus 30 mesh, unannealed	68.00¢
Silicon	34.00¢
Solder powder	8.5¢ plus metal cost
Stainless steel, 302	75.0¢
Tin	$1.155
Tungsten, 99%	$2.90
Zinc, 10 ton lots	17.75 to 22.25¢

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.00 to $18.00
Foundry, Byproduct	
Buffalo	$22.75 to $23.10
Chicago, del'd	23.90
Chicago, f.o.b.	20.85
Detroit, f.o.b.	19.40
New England, del'd	22.75
Seaboard, N. J., f.o.b.	21.50
Philadelphia, f.o.b.	20.55
Swedeland, Pa., f.o.b.	20.50
Painesville, Ohio, f.o.b.	20.90
Erie, del'd	19.95
Cleveland, del'd	22.45
Cincinnati, del'd	21.40
St.. Paul, del'd	23.17
St. Louis, del'd	20.98
Birmingham, del'd	18.66

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick	*Carloads, Per* 1000
First quality, Pa., Md., Ky., Mo. (except Salina, Pa., add $5)	$80.00
No. 1 Ohio	74.00
Sec. quality, Pa., Md., Ky., Mo.	74.00
No. 2 Ohio	66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	11.50
Silica Brick	
Mt. Union, Pa., Ensley, Ala.	$80.00
Childs, Pa.	84.00
Hays, Pa.	85.00
Chicago District	89.00
Western, Utah and Calif.	95.00
Super Duty, Hays, Pa., Athens, Tex.	85.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	$13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa.	16.00
Silica cement, net ton, bulk, Ensley, Ala.	15.00
Silica cement, net ton, bulk, Chicago District	14.75
Silica cement, net ton, bulk, Utah and Calif.	21.00
Chrome Brick	*Per Net Ton*
Standard chemically bonded, Balt., Chester	$69.00
Magnesite Brick	
Standard, Balt. and Chester	$91.00
Chemically bonded, Balt. and Chester	80.00
Grain Magnesite	*Std. ⅝-in. grains*
Domestic, f.o.b. Balt. and Chester, in bulk, fines removed	$56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines	$30.50 to 31.00
in sacks with fines	35.00 to 35.50
Dead Burned Dolomite	
F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk. Midwest, add 10¢; Missouri Valley, add 20¢	$12.25

WARehouse PRICES

Base prices, f.o.b. warehouse, per 100 lb.
(Metropolitan area delivery, add 15¢ to base, except New York, add 20¢)

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Philadelphia	$5.15-5.71	$6.31-6.57	$7.27-7.52	$5.35-5.66	$6.51	$5.37-5.52	$5.09-5.24	$5.35-5.57	$6.16-6.31	$9.14	$9.29	$10.54	$10.68
New York	5.40-5.98	6.28-6.43	7.25-7.89	5.58-5.88	6.48-6.73	5.78	5.32-5.58	5.53-5.63	6.18-6.38	9.17-9.53	9.32-9.68	10.40-10.77	10.55-10.92
Boston	5.48-5.64	6.39	7.56-7.83	5.54-5.89	6.75-6.79	5.74	5.39-5.54	5.48-5.59	6.24-6.34	9.40-9.44	9.55-9.59	10.84-10.94	10.92-11.09
Baltimore	5.28	6.18	7.15-7.38	5.34	....	5.53	5.33-5.39	5.39	6.13	....	....	....	....
Chicago	4.85-5.10	5.75-5.95	6.95-7.30	4.85-5.30	6.15	5.10	4.90	4.90	5.70	9.35	9.60	10.80	11.05
Milwaukee	5.02-5.07	5.92	7.12-7.47	5.02-5.37	6.32	5.22-5.27	5.07	5.07	5.87	9.15-9.17	9.32	10.52-10.57	10.67-10.72
Norfolk	5.75	....	....	....	....	6.00	6.00	6.00	....	....	....	....	....
Cleveland	4.98-5.20	5.75[1]-6.04[1]	7.18-7.44	5.02-5.65	6.70	5.35-5.54	5.16-5.42	5.15-5.34	5.70-5.95	9.14-9.66	9.29-9.89	11.05	11.30
Buffalo	4.85-5.10	5.75-5.85	7.55-7.80	5.55-5.56	6.35	5.45-5.46	5.10	5.15-5.20	5.90-6.05	9.05-9.35	9.40-9.50	10.75	20.90
Detroit	5.20-5.55	6.05-6.50	7.70	5.25-5.70	6.25-6.55	5.50-5.55	5.30-5.37	5.30-5.52	6.02-6.07	9.31-9.55	9.20-9.47	10.72-10.95	10.87-11.10
Cincinnati	5.14-5.36[8]	5.82-6.21[8]	6.97-7.65	5.25-5.62[8]	6.31	5.50-5.71[8]	5.30-5.47[8]	5.30-5.62[8]	6.06-6.17[8]	9.31-9.35	9.50-9.51	10.75-10.76	10.90-10.91
St. Louis	5.19	6.04-6.09	7.29-7.64	5.19-5.79	6.49	5.39-5.44	5.24	5.24	6.04	9.69	9.94	11.14	11.39
Pittsburgh	4.85-4.90	5.75[1]	6.95-7.15	5.00-5.35	5.95	5.05-5.25	4.90-5.15	4.90-5.10	5.65-5.80	9.35	9.60	10.40	10.55-10.80
St. Paul	5.41	6.31	7.30-7.71	5.41	....	5.66	5.46	5.46	6.26	9.91	10.10	11.36	11.61
Omaha	5.92	....	9.18	5.92	....	6.17	5.97	5.97	6.77	....	....	....	....
Birmingham	5.05[1]	6.36	6.45	5.05[11]	6.36	5.25[11]	5.00[11]	5.00[11]	6.66	....	....	....	....
Houston	6.40	....	8.80	6.75	....	6.35	6.20	6.40	7.60	9.80	9.65	10.75	10.95
Los Angeles	6.30-6.40	7.85[1]-7.90	7.95-8.90	6.60-6.66	9.35[5]	6.10-7.40	5.75-5.90	6.05	7.85[15]-8.45	10.90	10.85	12.40	12.65
San Francisco	5.95[8]	7.15[2]	8.25-8.90	6.75[8]	8.25	6.30-7.60	5.90-6.90	5.90	7.55	10.90	10.85	12.40	12.65
Portland	6.50[4]	8.00[2]	8.15[2] 8.45[2]	6.85[4]	....	6.30[4]	6.25[4]	6.25[4]	8.25[4]	....	10.45[15]	....	12.05[15]
Seattle	6.20[4]-6.30[4]	7.75[2]-7.85[2]	7.85-8.00	6.55[4]-6.65[4]	....	6.20-6.30	6.15-6.25	6.05[4]-6.15[4]	8.00[14]-8.10[14]	....	10.30[15]-10.40[15]	....	12.00[15]-12.05[15]
Salt Lake City	7.05-8.00	8.20	7.90-9.06	7.10-7.59	....	5.75-6.65	6.65-7.00	6.95-7.25	7.55-8.40	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb; strip, extras on all quantities bars 1000 lb and over.

ALLOY BARS: 1000 to 1999 lb.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	.....	.....	.....	.....
Birmingham	42.88	43.38	.....	.....	.....
Buffalo	47.00-48.00*	47.00-48.00*	47.50-48.50*	.....	.....
Chicago	46.00	46.00	46.50	47.00	.....
Cleveland	46.00	46.50	46.50	47.00	51.00
Duluth	46.00	46.00	46.50	47.00	.....
Erie	45.50	46.00	46.50	47.00	.....
Everett	.. ..	49.50	50.00	.....	.....
Granite City	47.90	48.40	48.90	.....	.....
Ironton, Utah	62.00	62.50	.....	.....	.....
Lone Star, Texas	.....	75.00†	.....	.....	.....
Neville Island	46.00	46.50	46.50	.....	.....
Provo	46.00	46.50	.....	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....
Steelton	48.00	48.50	49.00	49.50	54.00
Struthers, Ohio	46.00	.....	.....	.....	.....
Swedeland	50.00	50.50	51.00	51.50	.....
Toledo	45.50	46.00	46.50	47.00	.....
Troy, N. Y.	.....	.....	.....	.....	54.00
Youngstown	46.00	46.50	46.50	.....	.....

DELIVERED PRICES† (BASE GRADES)

Consuming Point	Producing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	49.50	50.00	.....	.....
Boston	Steelton	6.27	54.27	54.77	55.27	55.77	60.27
Brooklyn	Bethlehem	3.90	51.90	.....	.....	.....	.....
Cincinnati	Birmingham	6.09	48.97	49.47	.....	.....	.....
Jersey City	Bethlehem	2.39	50.39	.. ..	.....	.....	.....
Los Angeles	Provo	6.93	52.93	53.43	.....	.....	.....
Mansfield	Cleveland-Toledo	3.03	49.03-48.53	49.53-49.03	49.53	50.03	54.03
Philadelphia	Bethlehem	2.21	50.21	.....	.....	.....	.....
Philadelphia	Swedeland	1.31	51.31	51.81	52.31	52.81	.....
Philadelphia	Steelton	2.81	50.81	51.31	51.81	52.31	56.81
San Francisco	Provo	6.93	52.93	53.43	.....	.....	.....
Seattle	Provo	6.93	52.93	53.43	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....

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* Republic Steel Corp. price: Basis: pig iron at Buffalo set by average price of No. 1 hvy. mlt. steel scrap at Buffalo as show in last week's issue of THE IRON AGE. Price is effective until next Sunday midnight.

† Low Phos, Southern Grade.

Producing point prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.00 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio —$59.50; f.o.b. Buffalo $60.75. Add $1.25 per ton for each additional 0.50 pct Si. up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0. pct or more P. Bessemer ferrosilicon pric are $1.00 per ton above silvery iron prices comparable analysis.

Charcoal pig iron base price for low pho phorus $66.00 per gross ton, f.o.b. Lysle Tenn. Delivered Chicago, $73.78. High pho phorus charcoal pig iron is not being pr duced.

erromanganese

78-82% Mn, Maximum contract base rice, gross ton, lump size.

..o.b. Birmingham	$162
..o.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	$160
..o.b. Johnstown, Pa.	$162
..o.b. Sheridan, Pa.	$160
..o.b. Rockwood, Tenn.	$165
..o.b. Etna, Pa.	$163

$2.00 for each 1% above 82% Mn; enalty, $2.00 for each 1% below 78%.

Briquets—Cents per pound of briquet, elivered, 66% contained Mn.

arload, bulk	10.0
on lots	11.6
ess ton lots	12.5

piegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
almerton, Pa.	$61.00	$62.00
gh. or Chicago	65.00	66.00

anganese Metal

Contract basis, 2 in. x down, cents per ound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. i, 3% max. Fe.

arload, packed	35.5
on lots	37.0

lectrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed ast of Mississippi, cents per pound.

arloads	32
on lots	34
ess ton lots	36

ow-Carbon Ferromanganese

Contract price, cents per pound Mn conined, lump size, delivered.

	Carloads	Ton	Less
07% max. C. 0.06% P, 90% Mn.	25.25	27.10	28.30
10% max. C	24.75	26.60	27.80
15% max. C	24.25	26.10	27.30
30% max. C	23.75	25.60	26.80
50% max. C	23.25	25.10	26.30
75% max. C, 7.00% max. Ci	20.25	22.10	23.30

licomanganese

Contract basis, lump size, cents per ound of metal, delivered, 65-68% Mn, 8-20% Si, 1.5% max. C.

arload bulk	8.60
on lots	10.25
riquet, contract basis, carlots, bulk delivered, per lb of briquet	10.0
on lots	11.6
ess ton lots	12.5

lvery Iron (electric furnace)

Si 14.01 to 14.50 pct., f.o.b. Keokuk, wa, openhearth $84.00, foundry, $85.00; 4.75 f.o.b. Niagara Falls; Electric furace silvery iron is not being produced at ackson. Add $1.00 per ton for each adtional 0.50% Si up to and including 3%. Add $1.00 for each 0.50 pct. Mn over pct.

licon Metal

Contract price, cents per pound conined Si, lump size, delivered, for ton lots acked.

% Si, 2% Fe	20.70
% Si, 1% Fe	21.10

licon Briquets

Contract price, cents per pound of iquet, bulk, delivered, 40% Si, 1 lb Si iquets.

rload, bulk	5.90
on lots	7.50
ss ton lots	8.40

ectric Ferrosilicon

Contract price, cents per pound conined Si, lump size, bulk, in carloads, livered.

% Si	17.50
% Si	10.50
% Si	13.00
% Si	14.65
-95% Si	16.50

lcium Metal

Eastern zone contract prices, cents per und of metal, delivered.

	Cast	Turnings	Distilled
n lots	$2.05	$2.95	$3.75
ss ton lots	2.40	3.30	4.55

Ferrochrome (65-72% Cr, 2% max. Si)

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered.

0.06% C	28.75
0.10% C	28.25
0.15% C	28.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	20.50
62-66% Cr, 4-6% C, 6-9% Si	21.35

Briquets — Contract price, cents per pound of briquet, delivered, 60% chromium.

Carload, bulk	13.75
Ton lots	15.25
Less ton lots	16.15

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carload	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carload	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, cents per lb. chromium contained packed, delivered, ton lots. 97% min. Cr. 1% max. Fe.

0.20% max. C.	1.09
0.50% max. C.	1.05
9.00% min. C.	1.04

Calcium—Silicon

Contract price per lb. of alloy, lump, delivered.

30-33% Ca, 60.65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloys

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max, St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn. V-7: 28.32% Cr, 15-21% Si, 14-16% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Ton lots and carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7 Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Other Ferroalloys

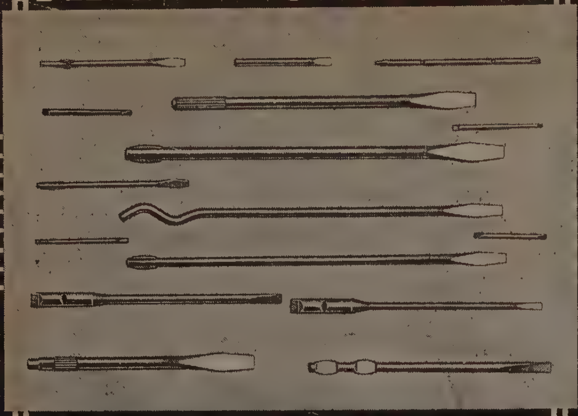
Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained, V.	
Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10
Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound Contained V_2O_5	$1.20
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.	
Ton lots	$2.75
Less ton lots	2.80
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo.	95¢
Calcium molybdate, 45-50%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo.	80¢
Molybdenum oxide briquets, f.o.b. Langeloth and Washington, Pa., per pound contained Mo.	80¢
Molybdenum oxide in bags, f.o.b. Langeloth and Washington, Pa., per pound contained Mo.	80¢
Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti	$1.23
Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti	$1.40
Less ton lots	1.45
High carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads, per net ton	$160.00
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per pound of alloy.	
Carload, bulk	6.60¢
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	8.40¢
Ton lots	9.30¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk	11.00
Ton lots, packed	11.25
Less ton lots	11.75

Borron Agents

Contract prices per pound of alloy, delivered.

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D.	
Ton lot	$1.20
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. X D, delivered.	
Ton lots	$1.67
Less ton lots	1.79
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	$1.80
Silcaz, contract basis, delivered.	
Ton lots	45.00¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	93¢
No. 6	63¢
No. 79	45¢
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b. Suspension Bridge, N. Y., freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.	
Ton lots, per pound	8.625¢
Borosil, f.o.b. Philo. Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	$6.25

MADE TO ORDER



Screw driver blades to order for assembly in any type of handle, wooden, composition or plastic.

Points in either keystone or cabinet type. Edge of point carefully made and of uniform thickness.

Shanks are winged, fluted, formed or milled, as shown.

Blades furnished in plain finish, blued or nickle plated.

The Torrington Company
SPECIALTY DEPT.
Torrington, Conn., U.S.A.

GRIFFIN

COLD ROLLED
STRIP STEEL
1/2" TO 19" WIDE
.002" TO .500" THICK
Depending on the width, within commercial practice
DESIRED QUALITY FOR
FORMING AND DRAWING—
GRIFFIN MFG. CO.
ERIE PENNA

SALES AGENTS

NEW YORK CITY—Wm. H. Leonori & Co., Inc., 30 Howard St.

CHICAGO—Central Steel & Wire Co., 3000 West 51st St.

DETROIT—D. S. Wegener, Boulevard Bldg., 7310 Woodward Ave.

BUFFALO—J. J. Lambert, 328 Huntingdon Ave.

CINCINNATI 14—Central Steel & Wire Co., Box 148 Annex Station.

SAN FRANCISCO — Charles L. Lewis, 703 Market St.

TIN PLATE
COP-R-LOY PIPE-SHEETS
Ductillite
THE MODERN TIN PLATE

WHEELING STEEL CORPORATION
WHEELING, WEST VIRGINIA

Annual Product Capacities by Companie

New York

• • • **Following are the** steel product producing capacities for various steel companies as of Jan. 1 1948, according to figures compiled by the America Iron and Steel Institute.

THE IRON AGE has chosen some of the major products which are made by many of the companies an presents them in convenient form for reference purposes.

It is to be remembered that these tonnage figure are not production figures for 1948 but only the annua capacity each company has to produce the variou items.

Ingots, Blooms and Billets for Forging Purposes

	Annual Capacity (N. T.)
Companies:	
Alan Wood Steel Company	110,500
Allegheny Ludlum Steel Corporation	1,450
Armco Steel Corporation	2,140
Sheffield Steel Corporation	7,600
Total	9,740
Bethlehem Steel Corporation:	
Bethlehem Steel Company	109,000
Colorado Fuel and Iron Corporation	500
Crucible Steel Company of America	52,000
Harisburg Steel Corporation	75,000
Inland Steel Company	20,000
International Harvester Company	36,000
Kaiser Company, Inc.	800
Timken Roller Bearing Company	20,000
United States Steel Corporation:	
Carnegie-Illinois Steel Corporation	342,000
Tennessee Coal, Iron and Railroad Co.	11,600
Total	353,600
Youngstown Sheet and Tube Company	18,000
Grand Total	806,590

Total Finished Hot Rolled Products

	Annual Capacity (N. T.)		
Products	Steel	Iron	Total
Rails—60 lbs. or less per yard	292,800	......	292,800
" —Over 60 lbs. per yard	2,705,600	......	2,705,600
Long joint or splice bars and tie plates	1,154,000	......	1,154,000
Structural shapes—Heavy	5,236,930	......	5,236,930
" " —Light	1,058,470	......	1,058,470
Steel piling (Rolled)	247,400	......	247,400
Plates—Sheared	5,811,400	......	5,811,400
" —Universal	1,371,300	......	1,371,300
" —Strip mill	683,000	......	683,000
Sheets—Hot rolled	18,947,570	......	18,947,570
Hoops, cotton ties and baling bands	108,300	......	108,300
Strip—Hot rolled	3,527,590	......	3,527,590
Strip for cold reduced black plate and tin plate	4,114,300	......	4,114,300
Bars—Other than concrete reinforcement	12,008,260	142,300	12,150,560
" —Concrete reinforcement — New billet steel	1,124,100	......	1,124,100
" —Concrete reinforcement — Rerolled	388,700	......	388,700
Wire rods	6,195,170	......	6,195,170
Skelp	4,095,900	310,000	4,405,900
Blanks or pierced billets for seamless tubes	3,285,040	......	3,285,040
Wheels and axles (Rolled)	404,050	......	404,050
Ingots, blooms and billets for forging purposes	806,590	......	806,590
All other finished hot rolled	305,960	......	305,960
Total	73,872,430	452,300	74,324,730
Total Steel Ingot Capacity	93,922,340	......	....
Pct to Ingot Capacity	78.7%	......	....
Companies:			
Acme Steel Company	545,000	......	545,000
Alan Wood Steel Company	333,600	......	333,600
Allegheny Ludlum Steel Corp.	324,250	......	324,250
American Chain & Cable Company, Inc.	175,000	......	175,000

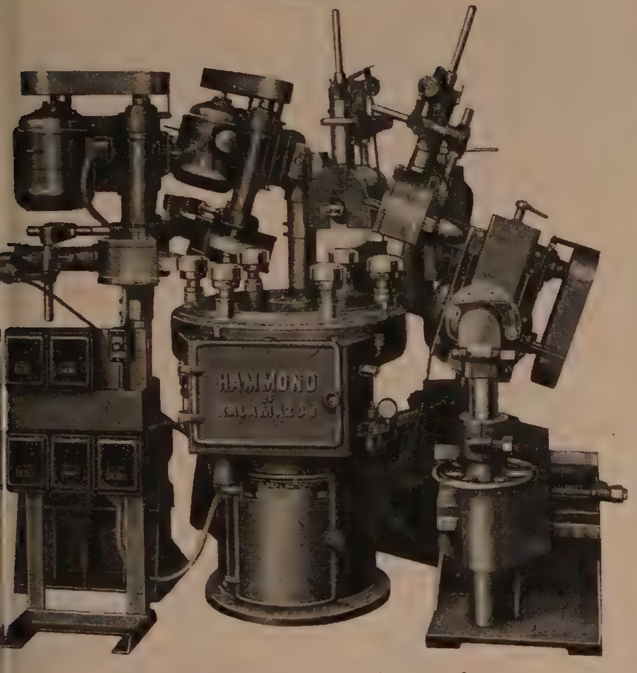
(CONTINUED ON PAGE 196)

Hammond

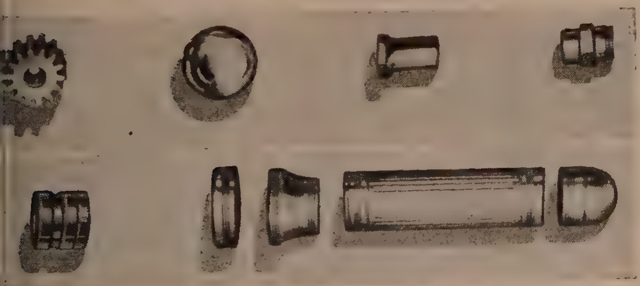
HIGH RODUCTION

POLISHING
BUFFING, BURRING

ROTARY UTOMATICS



MODEL J-34 Arranged with 4 Heads



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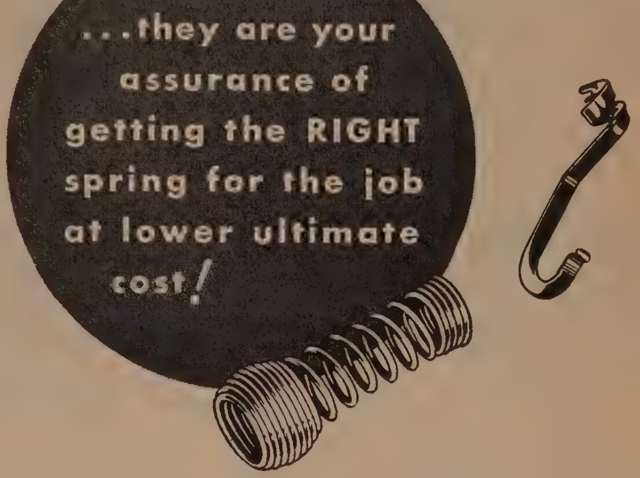

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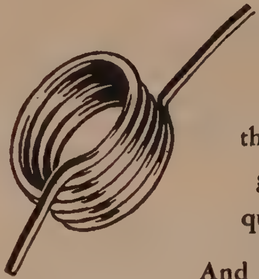

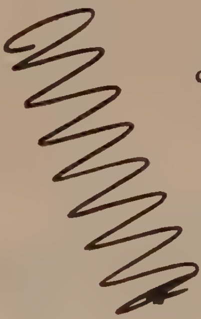

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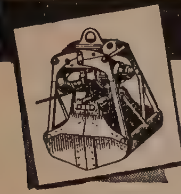

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THE HAYWARD CO., 40-50 Church St., N.Y. —HAYCO—

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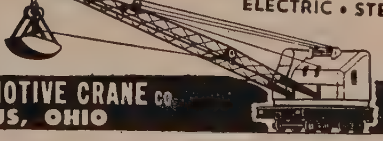

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25 TO 40 TON CAPACITY

GASOLINE • DIESEL
ELECTRIC • STEAM

THE OHIO LOCOMOTIVE CRANE CO.
BUCYRUS, OHIO

THE TORRINGTON ROTARY SWAGING MACHINE

— with 4000 forceful squeezing hammer blows per minute—makes metal tougher and more elastic. Send for booklet—"The Torrington Swaging Machine."

The Torrington Co., Swager Dept.
56 Field Street Torrington, Conn.

Products	Annual Capacity (N. T.) Steel	Iron	Total
Companies—continued			
American Locomotive Company.	123,000	......	123,000
American Swedo Iron Corp. ...	12,000	......	12,000
Ames & Company, Inc., W.	35,000	......	35,000
Armco Steel Corporation	1,522,440	......	1,522,440
Sheffield Steel Corporation ...	806,700	......	806,700
Total	2,329,140	......	2,329,140
Atlantic Steel Company	130,900	......	130,900
Babcock & Wilcox Tube Co. ..	30,240	......	30,240
Baldwin Locomotive Works ...	91,750	......	91,750
Bethlehem Steel Corporation:			
Bethlehem Steel Company ...	9,950,000	......	9,950,000
Bethlehem Pacific Coast Steel Corporation	549,000	......	549,000
Total	10,499,000	......	10,499,000
Boiardi Steel Corporation	80,000	......	80,000
Borg-Warner Corporation	440,000	......	440,000
Braeburn Alloy Steel Corporation	3,200	......	3,200
Buffalo Bolt Company	65,600	......	65,600
Buffalo Steel Company	72,000	......	72,000
Byers Company, A. M.	150,000	310,000	460,000
Carpenter Steel Company	24,600	......	24,600
Central Iron and Steel Company	288,000	......	288,000
Colorado Fuel and Iron Corp. ..	1,121.600	......	1,121,600
Columbia Tool Steel Company ..	1,800	......	1,800
Connors Steel Company	94,000	......	94,000
Continental Steel Corporation ..	245,000	......	245,000
Copperweld Steel Company	367,000	......	367,000
Crucible Steel Co. of America..	697,000	......	697,000
Disston & Sons, Inc., Henry ...	38,600	......	38,600
Driver Company, Wilbur B. ...	6,000	......	6,000
Eastern Stainless Steel Corp. ...	25,000	......	25,000
Edgewater Steel Company	81,960	......	81,960
Empire Steel Company	144,000	......	144,000
Ewald Iron Company	....	12,000	12,000
Falls Hollow Staybolt Company	....	8,000	8,000
Firth Sterling Steel and Carbide Corporation	11,550	......	11,550
Follansbee Steel Corporation ...	50,000	......	50,000
Ford Motor Company	899,750	......	899,750
Granite City Steel Company ...	400,000	......	400,000
Harrisburg Steel Corporation ..	75,000	......	75,000
Heller Brothers Company	18,000	......	18,000
Highland Iron & Steel, Inc. ...	38,000	3,700	41,700
Inland Steel Company	2,540,000	......	2,540,000
International Detrola Corp.	180,000	......	180,000
International Harvester Company	677,300	......	677,300
Janson Steel & Iron Company..	....	15,000	15,000
Jersey Shore Steel Company ...	30,000	......	30,000
Jessop Steel Company	26,000	......	26,000
Jones & Laughlin Steel Corp. ..	3,678,000	......	3,678,000
Joslyn Mfg. & Supply Co.	32,000	......	32,000
Judson Steel Corporation	54,000	......	54,000
Kaiser Company, Inc.	608,800	......	608,800
Kaiser & Frazer Parts Corp. ..	55,000	......	55,000
Keystone Steel & Wire Company	254,000	......	254,000
Knoxville Iron Company	88,000	......	88,000
Laclede Steel Company	390,000	......	390,000
Lathrobe Electric Steel Company	5,500	......	5,500
Lockhart Iron and Steel Co. ...	....	60,000	60,000
Lukens Steel Company	436,800	......	436,800
McLouth Steel Corporation	96,000	......	96,000
Mahoning Valley Steel Company	85,000	......	85,000
Midvale Company	69,000	......	69,000
Missouri Rolling Mill Corp. ...	70,000	......	70,000
National Steel Corporation:			
Great Lakes Steel Corp.	1,575,000	......	1,575,000
Weirton Steel Company	1,585,000	......	1,585,000
Total	3,160,000	......	3,160.000
Northern Steel Inc.	12,500	......	12,500
Northwest Steel Rolling Mills, Inc.	25,000	......	25,000
Northwestern Steel & Wire Co.	218 000	......	218,000
Oregon Steel Mills	100,000	......	100,000
Pacific States Steel Corporation	85,000	......	85,000
Parkersburg Steel Company	36,000	......	36,000
Phoenix-Apollo Steel Company..	391,000	......	391,000
Phoenix Manufacturing Company	15,000	......	15,000
Pine Iron Works Company	17,400	......	17,400
Pittsburgh Steel Company	720,000	......	720,000
Pollak Steel Company	72,000	......	72,000
Poor & Company	12,000	......	12,000
Portsmouth Steel Corporation ..	372,000	......	372.000
Reeves Steel and Mfg. Co.	75,000	......	75.000
Republic Steel Corporation	7,102,000	......	7,102,000
Richmond Rolling Mills, Inc. ..	10,000	......	10.000
Roebling's Sons Co. (John A.).	162,000	......	162,000
Rotary Electric Steel Company.	96,000	......	96,000
Sharon Steel Corporation	675,000	......	675,000
Niles Rolling Mill Company..	125,000	......	125,000
Total	800,000	......	800,000

(CONTINUED ON PAGE 200)

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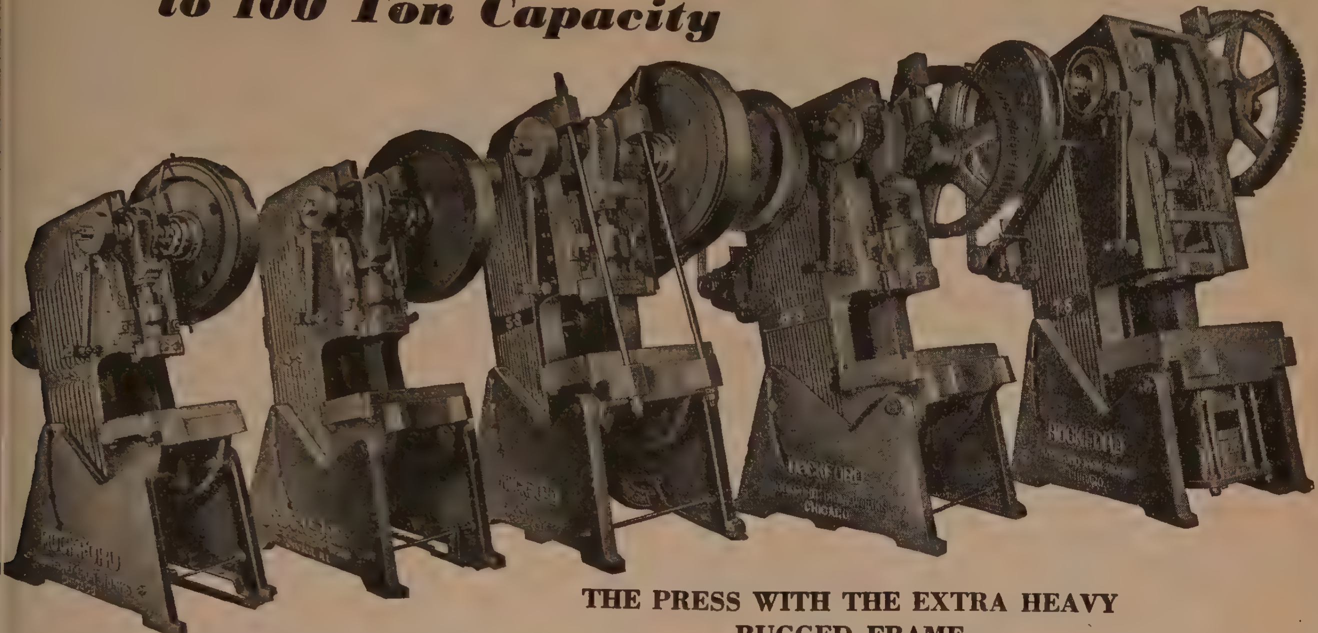

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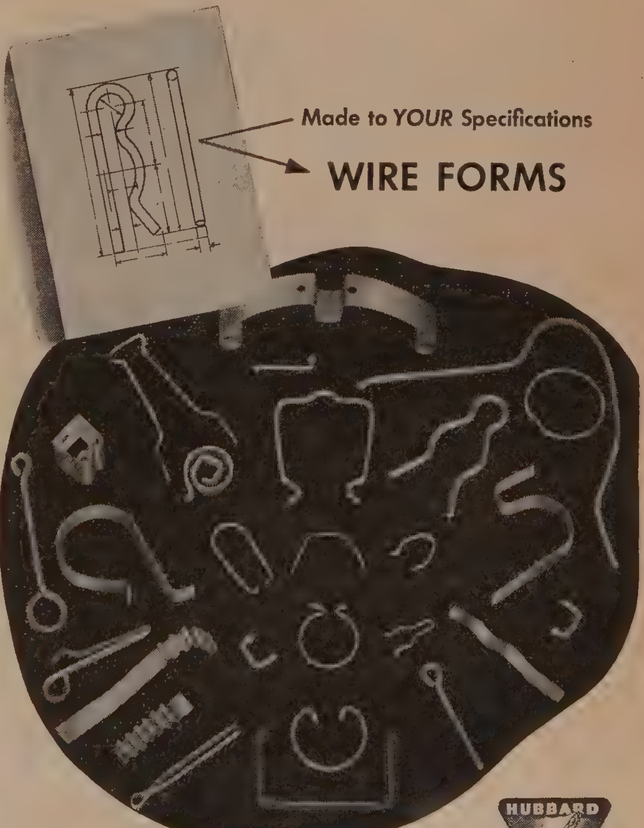

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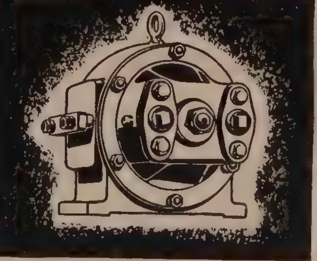

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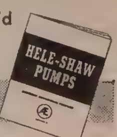

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AMERICAN ENGINEERING COMPANY
2430 Aramingo Ave., Philadelphia 25, Pa.
New York Office—75 West Street, N.Y, N.Y.
In Canada—Affiliated Engineering Corporations Limited • Montreal • Toronto

	Annual Capacity (N. T.)		
Products	Steel	Iron	Total
Companies—continued			
Simmons Company	36,000	......	36,000
Simonds Saw and Steel Company	11,180	......	11,180
Stanley Works	150,000	......	150,000
Superior Steel Corporation	115,000	......	115,000
Sweet's Steel Company	55,000	......	55,000
Texas Steel Company	58,500	......	58,500
Timken Roller Bearing Company	370,500	......	370,500
Tredegar Company	11,200	27,600	38,800
Ulster Iron Works	....	16,000	16,000
United States Steel Corporation:			
American Steel and Wire Co.	2,181,640	......	2,181,640
Carnegie-Illinois Steel Corp.	16,312,430	......	16,312,430
Columbia Steel Company	826,800	......	826,800
Geneva Steel Company	950,000	......	950,000
National Tube Company	2,148,600	......	2,148,600
Tennessee Coal, Iron and Railroad Company	2 594,700	......	2,594,700
Total	25,014,170	......	25,014,170
Universal-Cyclops Steel Corp.	43,400	......	43,400
Vanadium-Alloys Steel Company	6,000	......	6,000
Colonial Steel Company	7,840	......	7,840
Total	13,840	......	13,840
Vulcan Crucible Steel Company	3,000	......	3,000
Washburn Wire Company	92,200	......	92,200
West Virginia Steel and Mfg. Co.	140,000	......	140,000
Wheeling Steel Corporation	1,302,000	......	1,302,000
Wickwire Brothers, Inc.	38,000	......	38,000
Worth Steel Company	300,000	......	300,000
Youngstown Sheet & Tube Co.	3,195,600	......	3,195,600
Grand Total	73,872,430	452,300	74,324,730

Bars—Other Than Concrete Reinforcement

	Annual Capacity (N. T.)		
Products	Steel	Iron	Total
Companies:			
Allegheny Ludlum Steel Corp.	47,800	......	47,800
American Swedo Iron Corp.	12,000	......	12,000
Ames & Company, W.	35,000	......	35,000
Armco Steel Corporation	19,000	......	19,000
Sheffield Steel Corporation	139,400	......	139,400
Total	158,400	......	158,400
Atlantic Steel Company	22,750	......	22,750
Bethlehem Steel Corporation:			
Bethlehem Steel Company	1,457,000	......	1,457,000
Bethlehem Pacific Coast Steel Corporation	226,000	......	226,000
Total	1,583,000	......	1,683,000
Boiardi Steel Corporation	20,000	......	20,000
Borg-Warner Corporation	92,000	......	92,000
Braeburn Alloy Steel Corporation	3,200	......	3,200
Buffalo Bolt Company	40,500	......	40,500
Buffalo Steel Company	47,000	......	47,000
Byers Company, A. M.	50,000	......	50,000
Carpenter Steel Company	24,600	......	24,600
Colorado Fuel and Iron Corp.	75,900	......	75,900
Columbia Tool Steel Company	1,800	......	1,800
Connors Steel Company	7,400	......	7,400
Copperweld Steel Company	312,00	......	312,000
Crucible Steel Co. of America	459,000	......	459,000
Disston & Sons, Inc., Henry	22,400	......	22,400
Ewald Iron Company	....	12,000	12,000
Falls Hollow Staybolt Company	....	8,000	8,000
Firth Sterling Steel and Carbide Corporation	11,550	......	11,550
Ford Motor Company	59,750	......	59,750
Heller Brothers Company	16,800	......	16,800
Highland Iron & Steel, Inc.	38,000	3,700	41,700
Inland Steel Company	320,000	......	320,000
International Harvester Company	503,800	......	503,800
Janson Steel & Iron Company	....	15,000	15,000
Jersey Shore Steel Company	30,000	......	30,000
Jessop Steel Company	8,000	......	8,000
Jones & Laughlin Steel Corp.	510,000	......	510,000
Joslyn Mfg. & Supply Co.	27,000	......	27,000
Judson Steel Corporation	14,000	......	14,000
Kaiser Company, Inc.	71,000	......	71,000
Knoxville Iron Company	25,000	......	25,000
Laclede Steel Company	27,000	......	27,000
Latrobe Electric Steel Company	5,500	......	5,500
Lockhart Iron and Steel Co.	....	a60,000	60,000
Midvale Company	9,000	......	9,000
Missouri Rolling Mill Corpn.	16,500	......	16,500
National Steel Corporation:			
Great Lakes Steel Corporation	60,000	......	60,000
Northwest Steel Rolling Mills, Inc.	17,000	......	17,000
Oregon Steel Mills	100,000	......	100,000
Pacific States Steel Corporation	25,000	......	25,000
Phoenix Manufacturing Company	15,000	......	15,000
Pollak Steel Company	42,000	......	42,000
Republic Steel Corporation	b3,166,000	......	3,166,000
Richmond Rolling Mills, Inc.	10,000	......	10,000

(CONTINUED ON PAGE 202)

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STRENGTH UNIFORMITY DURABILITY REG. U.S. PAT. OFF.

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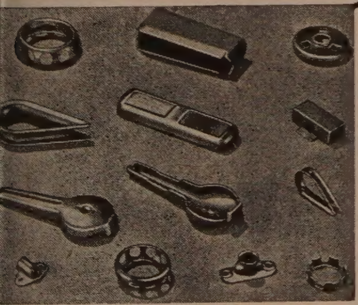

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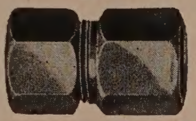

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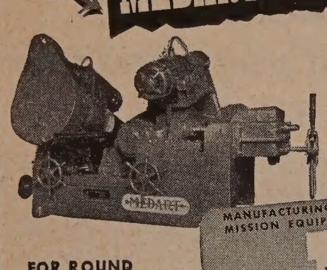

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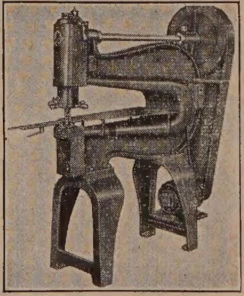

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Tough alloys ⅜"

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W. J. SAVAGE COMPANY
Knoxville Tennessee
Since 1885
Pioneer Mnfrs. of Nibbling Machines

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PRESSES
FEEDS
AUTOMATIC EQUIPMENT
The
V & O PRESS COMPANY
HUDSON, NEW YORK

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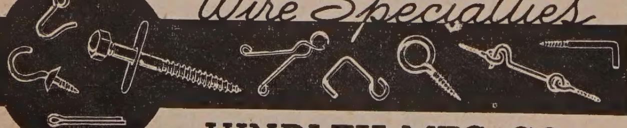

HINDLEY MFG. CO.
VALLEY FALLS · RHODE ISLAND

Companies—continued Products	Annual Capacity (N. T.) Steel	Iron	Total
Rotary Electric Steel Company	96,000	......	96,000
Simmons Company	33,000	......	33,000
Simonds Saw and Steel Company	6,000	......	6,000
Sweet's Steel Company	c25,000	......	25,000
Texas Steel Company	22,500	......	22,500
Timken Roller Bearing Company	134,000	......	134,000
Tredegar Company	....	27,600	27,600
Ulster Iron Works	....	16,000	16,000
United States Steel Corporation:			
American Steel & Wire Co.	102,500	......	102,500
Carnegie-Illinois Steel Corp.	2,704,500	......	2,704,500
Columbia Steel Company	79,490	......	79,490
Tennessee Coal, Iron and Railroad Co.	158,400	......	158,400
Total	3,044,890	......	3,044,890
Universal-Cyclops Steel Corp.	6,500	......	6,500
Vanadium-Alloys Steel Company	6,000	......	6,000
Colonial Steel Company	6,720	......	6,720
Total	12,720	......	12,720
Vulcan Crucible Steel Company	3,000	......	3,000
West Virginia Steel & Mfg. Co.	10,000	......	10,000
Youngstown Sheet & Tube Co.	372,000	......	372,000
Grand Total	12,008,260	142,300	12,150,560

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a Includes steel bars.

b Includes concrete reinforcement bars and tube rounds.

c Includes splice bars, tie plates and rerolled concrete reinforcement bars.

Buttweld Pipe

Companies:	Annual Capacity (N. T.)
Bethlehem Steel Company	288,000
Byers Company, A. M.	47,000
Fretz-Moon Tube Company, Inc.	52,000
Jones & Laughlin Steel Corporation	190,000
Kaiser Company, Inc.	144,000
Laclede Steel Company	54,000
Mercer Tube & Mfg. Company	80,000
National Supply Company	204,000
Pittsburgh Tube Company	60,000
Pymouth Tube Company	250
Repubic Steel Corporation	250,000
Service Steel Company	500
Sharon Tube Company	9,000
Simmons Company	3,100
United States Steel Corporation:	
National Tube Company	503,000
Wheatland Tube Company	121,470
Wheeling Steel Corporation	160,000
Youngstown Sheet and Tube Company	336,000
Total	2,502,320

Lapweld Pipe

Companies:	Annual Capacity (N. T.)
Bethlehem Steel Company	72,000
Byers Company, A. M.	90,000
Jones & Laughlin Steel Corporation	110,000
National Supply Company	90,000
South Chester Tube Company	108,000
Youngstown Sheet and Tube Company	199,200
Total	669,200

Seamless Pipe and Tubes

Companies:	Annual Capacity (N. T.)
Agaloy Tubing Company	1,000
Allegheny Ludlum Steel Corporation	3,000
Babcock & Wilcox Tube Company	198,000
Columbia Steel & Shafting Company	15,000
Globe Steel Tubes Company	66,000
Ivins Steel Tube Works, Ellwood	1,300
Jones & Laughlin Steel Corporation	372,000
Michigan Seamless Tube Company	17,000
National Supply Company	312,000
Ohio Seamless Tube Company	33,600
Pacific Tube Company	10,000
Pittsburgh Steel Company	268,000
Plymouth Tube Company	1,000
Service Steel Company	2,000
Sharon Steel Corporation:	
Detroit Tube & Steel Company	25,800
Superior Tube Company	1,500
Timken Roller Bearing Company	210,000
Tube Reducing Corporation	50,000
United States Steel Corporation:	
National Tube Company	1,405,600
Youngstown Sheet and Tube Company	470,000
Total	3,462,800

(CONTINUED ON PAGE 204)

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DAY OR NIGHT WITH
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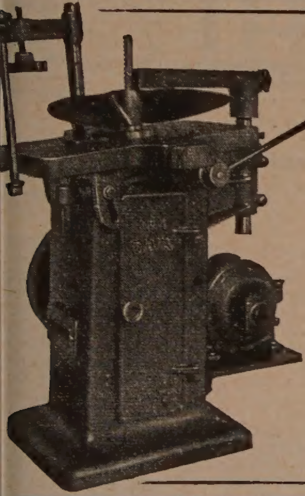

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Low in Cost. Durable.
Easy to operate.
Table adjustable for straight or taper keyways.
Three sizes. Keyways 1/16" up to 1¼".

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and
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7430 LOOMIS BLVD • CHICAGO 36, ILLINOIS
World's Largest Makers of Steel Press Brakes—Hand and Power Bending Brakes

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—PERFORATED—
TO YOUR REQUIREMENTS
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PERFORATED METALS
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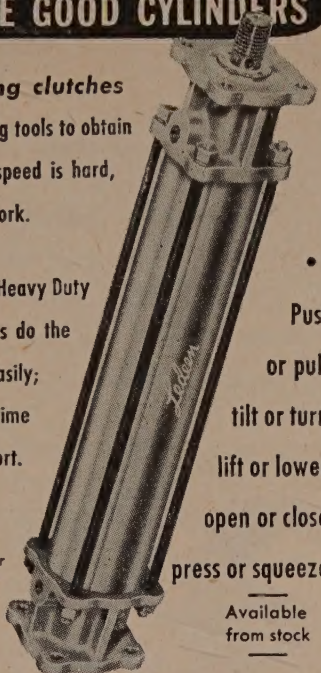

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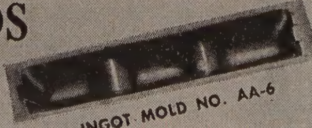

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INGOT MOLDS

25 Years' Experience in Custom Made Castings

ACME Foundry Co.
2501 TWENTY-SECOND STREET • DETROIT 16, MICHIGAN

ACME - M - HEAT RESISTING IRON

Electricweld Pipe and Tubes

Companies:	Annual Capacity (N. T.)
Agaloy Tubing Company	500
American Metal Products Company	30,000
Babcock & Wilcox Tube Company	46,000
Bundy Tubing Company	800
Globe Steel Tubes Company	1,400
Jackson Tube Company, Inc.	25,000
Jones & Laughlin Steel Corporation	56,000
Laclede Steel Company	10,000
Mark & Company, Clayton	24,000
Mercer Tube and Manufacturing Company	a12,000
Nikoh Tube Company	200,000
Ohio Seamless Tube Company	8,400
Pacific Tube Company	6,500
Pittsburgh Steel Company	5,000
Republic Steel Corporation	762,200
Sharon Steel Corporation:	
Brainard Steel Company	6,600
Smith Corporation, A. O.	520,000
Southern Pipe & Casing Company	24,000
Standard Tube Company	40,000
Toledo Steel Tube Company	15,000
Trent Tube Manufacturing Company	1,000
Wheatland Tube Company	3,000
Youngstown Sheet and Tube Company	228,000
Total	2,025,400

a Includes gasweld pipe.

Galvanized Pipe

Companies:	Annual Capacity (N. T.)
Bethlehem Steel Corporation:	
Bethlehem Steel Company	140,000
Byers Company, A. M.	84,000
Fretz-Moon Tube Company, Inc.	24,000
Jones & Laughlin Steel Corporation	84,000
Kaiser Company, Inc.	70,000
Laclede Steel Company	35,000
Mercer Tube and Manufacturing Company	40,000
National Supply Company	93,000
Pittsburgh Tube Company	24,000
Republic Steel Corporation	138,000
United States Steel Corporation:	
National Tube Company	216,000
Wheatland Tube Company	60,000
Wheeling Steel Corporation	120,000
Youngstown Sheet and Tube Company	138,000
Total	1,266,000

Plates

	Annual Capacity (N. T.)		
Companies:	Sheared	Universal	Strip Mill
Alan Wood Steel Company	145,600	....	....
Allegheny Ludlum Steel Corporation	6,000	....	....
Armco Steel Corporation:			
Sheffield Steel Corporation	109,000	....	....
Bethlehem Steel Corporation:			
Bethlehem Steel Company	660,000	360,000	....
Bethlehem Pacific Coast Steel Corporation	....	10,000	....
Total	660,000	370,000	....
Borg-Warner Corporation	25,000	....	....
Byers Company, A. M.	30,000	70,000	....
Central Iron and Steel Company	182,400	105,600	....
Colorado Fuel and Iron Corporation	7,000	....	....
Crucible Steel Company of America	42,000	12,000	....
Disston & Sons, Inc., Henry	5,600	....	....
Empire Steel Company	....	24,000	....
Inland Steel Company	135,000	85,000	185,000
International Harvester Company	....	60,000	....
Jessop Steel Company	10,000	....	....
Jones & Laughlin Steel Corporation	....	....	156,000
Kaiser Company, Inc.	228,000	2,000	....
Lukens Steel Company	436,800	....	....
Pine Iron Works Company	17,400	....	....
Republic Steel Corporation	....	....	12.000
Sharon Steel Corporation	75,000	....	....
Simonds Saw and Steel Company	400	....	....
United States Steel Corporation:			
Carnegie-Illinois Steel Corporation	2,279,100	624,700	....
Geneva Steel Company	700,000	....	....
Tennessee Coal, Iron and Railroad Co.	400,000	18,000	....
Total	3,379,100	642,700	....
Universal-Cyclops Steel Corporation	17,100	....	....
Wheeling Steel Corporation	....	....	252,000
Worth Steel Company	300,000	....	....
Youngstown Sheet and Tube Company	....	....	78,000
Grand Total	5,811.400	1,371,300	683,000

(TO BE CONTINUED)